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ABSTRACT

Behavioral objectives for five-year-old children, based on data from a literature search, and scales, tests, and inventories of preschool development, and their appropriateness, are discussed in the two sections of this report. Part A, Behavioral Objectives, presents a summary of findings from a previous report, Report I, and describes the procedures used in constructing behavioral objectives. Discussions are presented of behavioral objectives developed in the psychomotor domain (balance, movement and coordination; dominance handedness and laterality; growth and maturation; perceptual motor abilities; and speech), in the cognitive domain (attentional processes; ability, specific; concepts; language; memory; mediational processes; perceptual processes; and general cognitive), and in the affective domain (social behaviors, social perceptions and communications, motivation, and intra-psychic factors). In Part B, separate lists are provided for (1) tests, rating scales, inventories, and standard evaluation equipment; (2) observational procedures used under both naturally occurring and standard task conditions; and (3) technical assessment procedures. The evaluation of these instruments was performed in four phases: search, acquisition, abstracting and test review, and criteria. The overall conclusion of the study is that about more must be learned about preschool children in behavioral areas conceptually neglected by investigators. (For related documents, see PS 005 444-446 and PS 005 448.) (CK)

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LITERATURE SEARCH AND DEVELOPMENT OF AN EVALUATION SYSTEM IN EARLY CHILDHOOD EDUCATION

III. PART A--BEHAVIORAL OBJECTIVES
PART B--EVALUATION INSTRUMENTS

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CONTENTS

Part A. Behavioral Objectives

I. Introduction 2

Summary of Findings from Report I 2

II. Procedures 7

Using Data to Construct Objectives 7
Definition of Behavioral Objective 10
Summary of Procedures 12

III. Objectives and Rationale--Psychomotor Domain 13

Balance, Movement and Coordination 13
Dominance, Handedness and Laterality 14
Growth and Maturation 15
Perceptual-Motor Abilities 21
Speech 24

IV. Objectives and Rationale--Cognitive Domain 27

Attentional Processes 27
Ability Specific 29
Concepts 33
Language 48
Mediational Processes 52
Memory 56
Perceptual Processes 58
General Cognitive 60

V. Objectives and Rationale--Affective Domain 65

Social Behaviors 66
Social Perceptions and Communications 90
Motivation 100
Intra-psychic Factors 118

VI. Conclusions 135

Part B. Evaluation Instruments

I. Introduction 141

II. Procedures 147

Search 147
Acquisition 148
Abstracting and Test Review 150
Criteria for Test Inclusion 153

III. Inventory of Instruments: Reviews 155

IV. A Comprehensive, Documented Compilation of Tests Suitable for Use with Preschool Children 202

Tests 205

V. A Behavioral-Characteristics Listing of Observational Procedures for Use with Preschool Children 227

Observational Procedures 230

VI. A Representative Collection of Technical Assessment Procedures for Preschool Children 232

Technical Procedures 233

To be Concluded in Final Report

PART A--

BEHAVIORAL OBJECTIVES

BEHAVIORAL OBJECTIVES

INTRODUCTION

This is the first part of the third report in the project, Literature Search and Development of an Evaluation System in Early Childhood Education. The first report consisted of a summary of the researched characteristics of three- through five-year-old children, and the second report was a review of the taxonomical procedures used to analyze the data. The purpose of this section of the report is to develop and justify behavioral objectives for five-year-old children which can be derived from the research reviewed in the first report. Minor changes have been made in the number and content of reports which comprise the total project since the first report was prepared. For clarification to readers of that report, this is the section therein designated as Part II and is now called report three.

Summary of findings from Report I

The purpose of the first report was to analyze the research conducted during the last ten years on the characteristics of three- through five-year-old children in order to identify current thinking with respect to developmental factors which characterize the preschool child a) at different age levels, b) from different social strata, and c) from different ethnic backgrounds.

Selected journals, indexes, and other reference materials were searched to identify studies and fugitive literature concerned with the development of three- through five-year-old children and were then abstracted by a group of nine reviewers assigned to read in areas of their own expertise. These abstracts were first sorted into three domains of behavioral characteristics--psychomotor, cognitive, and affective. Each domain was then sorted

into advantaged, disadvantaged or undesignated as to socioeconomic status. Each of these categories was sorted by age into under five years old, five years old, and mixed. Finally, each of the age categories was sorted by racial-ethnic background into Anglo, Negro or mixed. Within this sort, final analyses were made on the basis of a categorical system within each domain.

The majority of studies included were drawn from recognized professional journals, ERIC materials, doctoral dissertations and unpublished reports obtained directly from the authors. Because of the tight time schedule under which the study was conducted, there was no time to fill in gaps. However, most of the important research is believed to be included. We estimated that the sampling of research represents approximately one-third of the total volume of data available.

At the end of each domain an attempt was made to summarize the findings in that domain regarding advantagement-disadvantagement, age, and ethnicity. In general, what was discovered was that the research did not focus on the types of questions to which answers were sought; that while the category system provided a very satisfactory means of examining the data, the content of the data did not provide informational input or volume of data in each category essential for the development of a taxonomy of behavioral characteristics, even though this was occasionally possible.

Specifically, it was found that comparisons between ADV and DADV, between under fives and fives, and between Anglo and Negro children were difficult due to the nature of the data. Few studies made explicit statistical comparisons of ADV and DADV, although both groups were represented in many of the studies. Studies of one SES level have not often been replicated with children of another SES level. The same problem holds for differences in Anglo and Negro children in terms of comparative data and replication

of studies. Categories with headings such as mixed or undesignated as to SES and ethnicity consistently contain more data than the specifically designated categories in all three domains. Researchers, in other words, have given little attention to these demographically related variations in children's characteristics. Data tend to be reported in terms of scores on particular tests or as experimental factors affecting performance on a specific task rather than as developmental abilities. Characteristics of children may be inferrable from this research, but the great majority of the research is not directly concerned with developmental characteristics of children, so the inferential process becomes tenuously tied to real data.

In the psychomotor domain, in particular, few studies focus on one age group while the majority include a two to five year age span with infrequent designation of the actual abilities of children at a given age. More than one-half of the data are undesignated as to SES level. Great gaps occur in the data. There are no studies of ADV Negro fives or ADV Negro children of mixed ages and only three studies of ADV Negro under fives. Only one study of ADV under fives with mixed ethnic background and only two studies of ADV five-year-old children with mixed ethnic background are available. The greatest gaps in DADV are in data on Anglo children, with only four studies on DADV Anglo under fives and three studies on DADV Anglo children of mixed ages. While there are more data, on the whole, in the undesignated SES categories, there are gaps there also. The analysis shows only one study of Negro children with undesignated or mixed socioeconomic background, mixed ages and four studies of Negro under fives of undesignated or mixed socioeconomic background. Most of the psychomotor research, therefore, is based on Anglo ADV children, Negro DADV children and mixed socioeconomic groups with little data on Anglo DADV and Negro ADV.

Unlike the psychomotor domain, most of the studies in the cognitive domain focus on specific age groups. Most of the studies, however, do not make comparisons between ADV and DADV. Studies at one socioeconomic level have not been replicated at the other socioeconomic levels, and studies with Anglo children have not been replicated with Negro children. Most studies that included several ethnic groups fail to report findings by ethnicity but rather give total group results. The comparisons are further hindered by the lack of studies in several demographic categories of major interest. There are no studies of ADV Negro children, mixed ages; only five of ADV Negro five year olds; only four of Negro children of undesignated or mixed socioeconomic background, under five years of age; and only three of Negro children of undesignated or mixed socioeconomic background, mixed ages. There are only three studies of ADV Anglo children, mixed ages; only six of DADV Anglo, under five years of age; and one of DADV Anglo children, mixed ages. Thus, because most of the studies of DADV are with Negroes and studies of ADV are with Anglos, racial and socioeconomic comparisons are at best tenuous since in either event the second variable is not held constant.

The studies of affective domain characteristics more frequently make reference to ADV and DADV status. For example, the ratio of designation to non-designation of socioeconomic status is about two to one for affective studies compared to about one to one for cognitive and only one to two for psychomotor. About one-half of affective studies are of ADV, one-sixth DADV, and one-third undesignated. Ethnicity remains undesignated frequently, and potential comparisons confound socioeconomic status and ethnicity often enough to obviate many statements about the data. Studies of Anglo ADV far outnumber those of Negro ADV, while Negro DADV slightly outnumber Anglo DADV. Age is designated much more often than not in studies of both ADV and DADV and likewise among those of undesignated socioeconomic status. Overall,

PS 005447

this permits many age comparisons. Further, studies designed for direct age comparisons of affective characteristics are proportionately much more numerous than those in either of the other domains.

Social behaviors, the most studied characteristics, are studied most among ADV, with all other categories assuming secondary importance. Among DADV, social behaviors and intra-psychic factors are studied about equally often. Undesignated counts are similar to those for DADV, with studies of intra-psychic factors slightly exceeding those of social behaviors.

The literature (within each domain) is clearly too piecemeal to be more than suggestive of the composition of future taxonomies or comprehensive descriptions. Relationships among variables within a domain are not shown and appear not to have been investigated in any systematic way. Across domains, especially, relationships among variables have not been investigated. As a result we do not know what varies with what. Normative data are rare. One of the important contributions of the literature search has been to raise questions about the myth that educational programs rest upon a sound research base.

Despite the inadequacies of the research pointed out in the first report, it is still important to further examine the findings to determine what we do know about the development of children which is helpful in program planning. The next step in the project is to determine behavioral objectives for five year olds which can be justified on the basis of current research. This report undertakes this task.

PROCEDURES

In the original conception of this project, it was planned that a taxonomy of behavioral characteristics would be constructed for each year level; three, four, and five, with terminal behavioral objectives being formulated for fives only. A further intent was that the taxonomy would distinguish what were reasonable expectancies regarding the terminal characteristics of children of different socioeconomic (SES) levels and ethnic backgrounds. The taxonomy was to be representative of the cognitive, affective, and psychomotor behavioral characteristics and general physical status of these children. Report two gives a detailed analysis of the taxonomical approach which was used. The tables included in that report show the inadequacies of the data for that purpose. The report did show, however, that it would be possible to recombine the demographic categories and develop an empirically based set of behavioral objectives for five year olds in the psychomotor, cognitive, and affective domains, but without specific reference to the ethnic or SES backgrounds of children.

Using Data to Construct Objectives

In the present report, findings of the first report were reassembled by behavioral categories, each containing findings from as many of the twenty-seven demographic categories as have been studied with reference to that particular behavioral characteristic. Each behavioral category was carefully examined for indicators of behavioral characteristics and summaries of the data were prepared. These summary of data sections, which are directly based upon the empirical literature reviewed in report one, provide in

their organized presentation here the justification for the behavioral objectives which are presented. They are written with sufficient detail to reflect the limitations of their applicability, while specific reference is made also at the close of each section to the demographic sampling restrictions which diminish the generality or external validity of the conclusion that children at five years can be expected to perform in a particular manner.

Because of the previously mentioned gaps in the data, development of some criteria was necessary to determine when an attempt would be made to write an objective and when the data would be declared inadequate. Two basic criteria were applied as a beginning step. If the amount of information yield (see report two) in report one was less than one full page the category was automatically eliminated. As a second criterion, all categories or sub-categories having less than three studies were also dropped. Relevance to the formulation of behavioral objectives constituted a third criterion. Its application is illustrated below for the data on "Intelligence."

On the foregoing basis, the greatest volume of material was eliminated from the psychomotor domain. Four categories were dropped because of insufficient data: "Construction with Manipulables," "Self-care Activities," "Play," "Vitality." In the cognitive domain, a somewhat different problem appeared. Some of the categories contained test data, useful for other purposes, which contributed nothing to the specification of behavioral objectives for five year olds. On this basis, the category "Intelligence" was dropped since it dealt with the undifferentiated intelligence quotient. This, of course, does not mean that major data on intellectual processes were dropped. These data appear in categories such as "Concepts," "Language," and "Perceptual Processes." The category, "Creative Processes," was incorporated into the sub-category

"Intra-psychic: Creativity" in the affective domain.

In the affective domain, on the basis of the three criteria previously described, "Social-cultural-familial Factors" was also dropped. Since this domain was already broken down into subcategories, merging and dropping of the subcategories accounted for several changes. In "Social Behaviors," "Family Factors," and "Situational Factors" were dropped. "Sex-typing" was merged with "Identification," "Introversion" with "Prosocial," "Dominance" with "Aggression," "Conformity" with "Resistance to Temptation," "Transgression," and with "Intra-psychic: Controls" to form a new sub-category designated as "Development of Controls." In "Social Perceptions and Communications," "Perceptions of School," and "Social Perceptions Other" were dropped. "Self-awareness" was merged with "Intra-psychic: Self concept" and "Emotional Communication" with "Affective Awareness." In "Motivation" only "Preference" and "Stimulus Variation" were retained. All remaining sub-categories were merged into a highly compressed new category "Types of Feedback the Child Can Use." In "Intra-psychic Factors," as already indicated, "Creative Processes" from cognitive was merged with "Creativity;" "Temperament" combines "Behavioral Pathology," "Orderliness" (persistence), "Activity Level," "Emotionality," "Reactivity," and "Adaptability." "Locus of Control" was moved to the new motivation grouping.

In the preparation of the summaries of each category or sub-category, studies of five year olds were emphasized as far as possible but the degree to which this could be done was dependent upon the completeness of information on five year olds. Rather than omit categories for which data on fives were incomplete, we combined data across all demographic categories, and indicated at the end of the summary, immediately following the references, the demographic categories from which data had been taken. This seemed to permit

maximum utilization of the studies without misleading the user of the document as to the adequacy of the original sampling.

Methodology for development of behavioral objectives has been a matter of some concern; consequently a panel of consultants was involved at various stages in the process to enhance the professional judgment of the project staff. The consultants were first involved in a discussion of the approaches which might be used in the development of objectives. Later, after sample summaries of data and behavioral objectives had been prepared, their reactions were obtained. Finally, a sampling of objectives was discussed by staff and consultants and further suggestions regarding both the approach used and the content of objectives were made. Considerable refinement of the approach used to arrive at the objectives, the content of the objectives, and the manner of presentation in the report was obtained in this manner.

Definition of Behavioral Objective

A behavioral objective has been defined here as a description of expectations of a particular observable or otherwise directly measurable behavioral event which is related to school performance, and which our data identify as being found among advantaged five year olds. Also, included are "must do" and "hands off" objectives for adults. In the "hands off" objectives, we have indicated that attainment of the behavior may be possible for a few fives but may be entirely inappropriate as an expectation for the majority of fives. Occasionally, as in the "must do" objectives where implications for adults are particularly strong, these have been included in parentheses after the objective.

In principle, since these terminal objectives deal with an entire age year of the child's experience, generic groups of performances are used where appropriate to label the objective rather than limiting the objective to some isolated instance of the generic class. For example, in "Concepts: Objects," the child is expected to be capable of categorizing materials on the basis of color. Color sorting in this case constitutes a generic category of conceptual activity. The real point is not which particular colors or what specific objects they are part of. That the description deliberately does not say that"the child sorts red, blue and yellow buttons or blocks" does not mean that the objective is not behavioral. It means that within the broad limits discussed in the summary section, the child can sort a great variety of objects representing a wide range of colors. When the outcome to be expected is not more general, some restrictive phrase, clause, or other set of descriptors is appended to the objective to indicate the admissible limits of its application. Likewise, to say that the five year old can classify on the basis of form is no less behavioral than to say that he can classify into the categories: circles, squares, and triangles. The former appears, in fact,to be a more viable objective to disseminate to a broad user audience, because it allows program personnel to decide which forms to select (again within some broad limits discussed in the summary of data) with reasonable assurance that the child can deal with forms in this way.

The only departure that this represents from the traditional writing of behavioral objectives in the practice of some persons is the added requirement that the adult assess whether the child has responded to color or form rather than to blue or red or to circularity or triangularity. Since five year olds are capable of responding to such categorical information,

it seems to impose no great intellectual overload on an adult to recognize that this is what the child is doing. In fact, to miss that the child is responding to a stimulus attribute rather then to a simple stimulus quality is to miss what the child is really doing. This generic procedure of referring to objectives, therefore,may better help the adult stay in tune with the organized complexity of the child's behavior.

Summary of Procedures

To summarize the procedures, findings from studies were regrouped according to grosser demographic categories. Some regrouping and subclassification of data were accomplished in the interest of better representing the behavioral processes involved. Deletions were made when the behavioral characteristics were not related to potential behavioral objectives. This information is not lost but remains available in report one for those who require it. Specific criteria determined when a deletion would be made. When particular cautions were required for adult behavior, these were positioned immediately following the associated behavioral objective. The form in which the behavioral objectives are stated is discussed in considerable detail. A unique feature of the present approach is that behavioral objectives are empirically derived rather than based on intuition or even on generally accepted but untested assumptions about what is appropriate for the child.

OBJECTIVES AND RATIONALE--PSYCHOMOTOR DOMAIN

Behavioral objectives have been developed in the psychomotor domain in the following categories: balance, movement and coordination; dominance handedness and laterality; growth and maturation; perceptual motor abilities; and speech. Several categories were eliminated because of insufficient data. These included construction with manipulables; play; self-care activities; and vitality. Also, within the categories for which at least one behavioral objective was developed, other subcategories were dropped because of insufficient data.

With the exception of growth and maturation, which differs from the remainder of the categories in that it is a non-behavioral, physical status type of category, the data are often minimal and do not easily fit together into a concise statement. An attempt has been made to show the demographic categories from which data are drawn to enable the reader to see which objectives are better supported than others.

Balance, movement and coordination

Gross motor control

Summary of data.--Developmental differences are shown in the execution of the jump for horizontal distance. Various other skills (e.g., line walk, hop on right and left foot, ball catching, jumping in place, jumping on each foot, and walking a balance beam backward and forward) have been used to obtain comparison measures of children's abilities. Anglo fives are less skillful than Negro fives at tasks demanding physical coordination; even though some children are sure-footed and quick with good rhythm, they

show a lack of motoric caution. The best predictor of gross motor control is a rating of muscle tone. Other factors such as physical conditions at birth, induced or natural labor, specific learning opportunities, positive learning attitude and verbal ability are also related to the child's status. Fives who are given a training program of gross motor activities show gains on tests of motor and perceptual skills in the majority of programs (Pavenstedt and Others, 1967; Edwards, 1968; Niswander, Turoff, and Romans, 1966; Hellenbrandt and Others, 1961; Dennis, 1960; Coffman and Dunlap, 1968; Stone and Pielstick, 1969; Kohlewes, 1966; Edgar and Others, 1969; Lazroe, 1969; Fleege, Black, and Rackaukas, 1967; Argy, 1965; Gill, Herdtner, and Lough, 1968). The preponderance of the data comes from studies in which SES is not identified, with a few studies on DADV children. Data are also based on Anglo and mixed racial groups with only one study of Negro children. Data are provided on both fives and under fives. Although the developmental aspects of gross motor control are supported here only in the case of jumping, no data have been presented which contradict the commonly held view that other gross motor abilities are also developmental.

Behavioral objective.--Fives can execute a true jump for horizontal distance.

Dominance, handedness and laterality

Left-right discrimination

Summary of data.--Fours cannot left-right discriminate (point to one of six colored circles arranged in three rows of two) on the basis of verbal directions, but beginning at five years errors decrease and continue a

strong linear decrease with increasing age to age ten. The child masters left-right discrimination related to self before he can recognize the left and right sides of objects and persons before him or in back of him (Milgram, 1968; Boone and Prescott, 1968; Belmont and Birch, 1963; Miller, D., 1969). Data include DADV, ADV and undesignated SES children. No evidence is given to show whether fives can make other kinds of left-right discriminations.

Behavioral objective.--Left-right discrimination (selecting the left or right object on the basis of verbal label) is unsupported as an expectation for fives, although some fives may sometimes make left-right discriminations.

Growth and maturation

Physical measures

Summary of data.--Based on populations from several continents, contemporary populations of fours differ as much as seven inches in mean height and eleven pounds in mean weight. Compared to a "normal" population, LSES children have height and weight measures which vary from normal to below average. There is little difference in data for boys and girls under four for measurements of both the bone and muscle width. Growth shows basically a rapid increase in infancy and a slower more straight curve in the childhood years. Fat width rises rapidly during infancy, with the curves for boys and girls practically superimposable, but between the second and fifth years girls lose fat less rapidly than the boys. The rate of change with increasing age for each tissue is not the same for each tissue at the different age levels. Also different is the

rate of skeletal maturation, with girls having a higher mean rate of growth between five and six years. Most children deviate from the median trend line in their ossification pattern; however, correlations between individual ossification increments and height and weight indicate that no inference can be made about height and weight from knowledge of ossification increments.

Analysis of factors affecting anatomic, physical and psychological growth of Negro children under five reveals that intragroup variations are similar, both in range and in factors relating to the variation, to those long accepted as existing among Anglo children. Economic status is related to most of the measurements of growth and development, such as weight, height, head and chest circumference, and nutritional evaluation. Those children who are in the extremes of physical measures such as height, weight, and hemocrit have a likelihood of having characteristics that place them in the extremes of other measures. Those in the lowest tenth percentile of hemocrit have twice the expected representation in the group of children below the tenth percentile in mental maturity. Those above the 90th percentile in head circumference have an increased frequency of neurological effect. However, when mental ability groups are compared on differences in height and weight, there is very little indication of a relationship (Stine, Saratsiotis, and Furno, 1967; Crump and Horton, 1961; Horton and Crump, 1962; Meredith, 1968; Ashcroft and Others, 1966; Maresh, 1966; Tanner and Whitehouse, 1962; Anderson, Messner, and Green, 1964; Crispin and Others, 1968; Kugel and Parsons, 1967; Munro, 1968; Murphy, Guthrie, and Woodruff, 1967; Owen and Others, 1969; Garn, Rohman, and Robinow, 1961; Garn and Haskell, 1960; Marshall, 1969; Hansman and Maresh, 1961). DADV populations of under fives have been studied, as have populations of undesignated SES. No studies of five year olds were

reviewed, so one can only assume that results which are true for under fives and mixed ages are also true for five year olds. The data do not include a discussion of any of the factors such as height and weight of parents which may be related to the size of the children. Neither do the data point out the significanceof the child's own growth curve, which must always be considered

Behavioral objective.--A growth curve for each child which is normal for him is one indicator that his basic physical needs are being met. (These data pointing up the particular vulnerability of the DADV child for physical growth problems provide evidence for the need for basic health care and proper nutrition as a component of an educational program.)

Nutrition

Summary of data.--Calcium, vitamin A and iron are the least well supplied nutrients, particularly among low income groups of preschool children, with protein, calories, ascorbic acid, and vitamin B complex among the nutrients which also may not be well supplied. Wide variations are found in the intake of various nutrients by preschool children. Most children show a characteristic pattern of food intake which varies from infancy into early childhood and reveals a change in the curve of intake of nutrients as the consumption of specific foods changes. During this period, there is a decrease in the intake of calcium, phosphorus, ascorbic acid, iron, vitamin A and riboflavin. Caloric intake varies between 48 percent and 141 percent of the recommended allowance, with large percentages of LSES children eating more than 100 percent of the daily recommended allowance, including a high percentage of non-enriched carbohydrates and fat. The greatest source of calories for the LSES group is the bread and

cereal group. The percentage of total protein derived from animal protein in the diets of three through fives is approximately 70 percent. Patterns involving extreme shifts from high to low are very rare. Protein supplement, whether from animal or plant sources, results in an increase in the percentage of albumin which does not occur with a protein-free supplement. Vitamin deficiencies do not seem to interfere with the growth performance of children to the same extent as protein and calorie malnutrition. Eating sweets between meals is associated with a greater incidence of decayed, extracted or filled teeth.

Food dislikes are common among preschool children. They are found to have fewer likes and to be familiar with fewer foods than their parents. All foods unfamiliar to both parents are usually unfamiliar to the child also. Foods disliked by both parents are usually disliked by the child or are unfamiliar to him. Food intake consumed by fives during the noon school meal provides one-third of the daily requirement of iron, over one-third of the calories and all of the other nutrients, including a high amount of vitamin A and ascorbic acid (Madhaven, Susheela, and Swaminathan, 1967; Samenfink, Schuck, and Opheim, 1958; Burke and Others, 1962; Metheny and Others, 1962; Kerrey and Others, 1968; Owen and Others, 1969; Munro, 1968; Kugel and Parsons, 1967; Beal, 1961; High, 1969; Hanafly and Others, 1967; Weiss and Trithart, 1960). Data reported are drawn from studies of LSES children and mixed SES children covering the age range from three through five years. The data clearly establish the prevalence of malnutrition, particularly among LSES children. The relationship of nutrition to intellectual development, particularly in infancy and preschool years, although not included in this data, is clearly established and therefore links nutrition to school achievement.

Behavioral objective.--The nutritional status of fives is shown to be below recommended standards on a variety of nutrients. This is particularly true among low SES children. (For optimal school achievement the child must be provided with a diet adequate in all nutrients necessary for proper growth. The responsibility of the school includes supplementing the diet which is provided by the home if this is necessary.)

Medical problems

Summary of data.--Data from perceptual-motor abilities concerned with the need for visual and auditory screening have been combined into this section since both require medical attention for diagnosis and treatment.

Medical problems, many of them major and many not under care, are common among LSES children. Some of the most frequently identified are dental diseases, diseases of the nervous system, asthma and other allergic conditions, hemotological diseases, gastro-intestinal diseases, nutritional diseases, respiratory diseases, skin infections, enuresis, hernias, speech abnormalities, and vision and hearing losses. Two major causes of health problems are congenital malformations and infections, followed by allergy, nutrition, and tumors. Proportionately fewer infections are found during summer months than during the spring. Tumors are more frequently identified in the Anglo children, while congenital malformations are more frequent in the non-white children. Fewer health problems occur in the Anglo group than in the non-white group, although Anglos are hospitalized more often.

Health problems are often found in conjunction with personality problems, neurological problems and mental retardation, and deviations in the size of the head and in height and weight. Obstetrical complications increase the occurrence of neurological signs, with five times as many

children still abnormal between two and four years as compared to newborns without complications. Prematurely born children, apparently without neurological deficits, do not necessarily have a good prognosis for learning at later ages. Comparisons with normal three through sevens indicates subtle distinctions seem to persist in those aspects of the learning process which, like reading, writing and spelling, require a high degree of differentiation and integration. The prematures' nervous systems seem to function more primitively, their behavior controls seem less firmly established, and their neurological integration lower than that of maturely born subjects. They present subtle difficulties in motor, perceptual, visuo-motor and linguistic patterning (Stine, Saratsiotis, and Furno, 1969; Sherman and Doyle, 1967; Hartman and Others, 1960; Prechtl, 1965; Stone and Kudla, 1967; Scott and Kessler, 1968; Gilbert, Lewis, and Day, 1967; Kravitz, 1966; Brewster, 1968; Comly and Hadjisky, 1967; Kugel and Parsons, 1967; Munro, 1967; DeHirsch, Jansky, and Langford, 1966).

Large scale vision screening results in the referral of 5 to 6 percent of three and four year olds for professional examination. Seventy-five percent of referrals have some type of abnormal eye condition, such as refractive errors, strabismus and amblyopia. Some threes cannot be tested because of rejection of the occluder which is used in testing, but testing after 41 months is usually possible and is recommended by a large number of investigators. Refractive errors, strabismus, and amblyopia can be identified and should be treated in early childhood (Hatfield, 1967; Kaivonen and Kaskenoja, 1963; Kittredge and Cunningham, 1965; Savitz, Valadian, and Reed, 1965; Weisenheimer, 1967; Michigan Department of Health, 1965; Hatfield, Barrett, and Nudell, 1967; Trotter, Phillips, and Shaffer, 1966; Burman, 1969; Gibbons, 1970; Kripke, Dunbar, and Zimmerman, 1970).

Estimates of the number of children having hearing loss vary from 4 to 10 percent, with diseased conditions causing the percentage to rise. The rate is comparable to that of school age children. Correction of hearing defects at the preschool age for these children is advocated as a means of improving their educational achievement (Ashley and Seshin, 1962; Griffing, Simonton, and Hedgecock, 1967; Kravitz, 1966; Michigan Department of Health, 1965). Data on medical problems come primarily from LSES and undesignated SES populations and are based upon three- through five-year-old children rather than predominantly on five year olds. Comparative data with ADV children are not provided. Percentages of children found to have problems vary from one study to another, but the large number of investigators reporting problems seems to emphasize their prevalence and significance in the growth of the child.

Behavioral objective.--The five who has unidentified and untreated medical problems, including visual and auditory problems, is also likely to have learning and personality difficulties. (All fives have a right to adequate medical and dental care. If this is not provided by the home, then it must be provided by the school or community. Furthermore, the prenatal care of the mother is of particular importance to the child and his later learning potentialities.)

Perceptual-motor abilities

Drawing

Summary of data.--Fives are very inaccurate in realistic drawing but there is a clearly established age related improvement in ability t draw

clearly and to include more detail. Children prefer drawings with greater clarity than they can draw. Preference for greater clarity also increases with age. Some of the child's difficulties in drawing may result from inadequate perception, but the ability to perceive does not necessarily result in translation of discriminations into improved drawing. Children do not consistently improve their drawing as a result of verbal or visual cues, although modeling of a drawing has been shown to have some effect on drawing. Drawings are influenced by the kind of atmosphere established by the adult in the classroom. Drawings by children from classrooms rating high on supportive discipline are rated higher than those from punitive classrooms (Clos and Serafica, 1967; Kannegieter, 1970; Kirschner, 1969; Bee and Walker, 1968; Lurcat and Kostin, 1970; Lewis, 1963; Reichenberg-Hackett, 1964; Urbana and Pease, 1960-1961). Data are drawn almost equally from studies of ADV, DADV and undesignated SES groups. More data are included on under fives and mixed ages than on fives. None of the data are on Negro children. It appears that a number of factors in addition to ability to draw accurately may influence what the child actually produces when directed to make a specific drawing.

Behavioral objective.--Realistic drawing is poorly developed at age five and improves with increasing age. The child prefers more accurate drawings than he produces.

Copying

Summary of data.--When asked to copy a form, fives show a clearly established, age related improvement. In form copying two and one-halfs to fives improve with age in accuracy of reproduction based on form

curvature-linearity, open-closedness, number of parts, relationship of parts, orientation on the background, size of relationship and intersections. Although errors are common, fives are superior to fours in copying letters of the alphabet, Arabic numerals, and stick designs. ADV children are superior to DADV children in copying. Head Start does not eliminate the low scores on copying letters and numerals (Wise, 1968; Ozer and Milgram, no date; Clos and Serafica, 1967; Graham, Berman, and Ernhart, 1960; Moriarty, 1961). Three of the five studies reviewed include fives, but no studies deal exclusively with fives. With one exception, all studies are based on DADV and undesignated SES children.

Behavioral objective.--Copying is poorly developed at age five and improves with increasing age. ADV children are superior to DADV children in copying.

Perceptual-motor (general)

Summary of data.--Perceptual-motor functions show improvement with age between four and five years with older children more skillful in performing tasks such as buttoning or working a puzzle. DADV fives have a deficit of about one year in perceptual-motor functioning. Perceptual-motor training programs have been found to increase readiness; however, training programs are not always adequate to overcome visual-motor deficiencies. Immature and unsettled children profit least from the training activities (Johnson, 1965; Rutherford, 1965; Ellerman and Wadley, 1970; Keim, 1970; Sapir, 1966; Siegenthaler and Barr, 1967; Starkweather, 1966). Six of the seven studies concerned with perceptual-motor activities are based on populations which are not designated as to SES. The remaining

study is of DADV children. All data are based on fives and populations of mixed ages. Considering the wide use of perceptual-motor activities, very little data is given to support conclusions regarding what children can do.

Behavioral objective.--Fives have a relatively high degree of skill in activities such as working puzzles and buttoning when compared to younger children. DADV fives have a deficit in perceptual-motor functioning.

Speech

Articulation

Summary of data.--Articulatory ability increases with age between four and one-half and five and one-half with place of articulation as the primary source of error, while errors of voicing and manner of articulation occur less frequently. Substitution errors, which decrease appreciably with increasing age, account for the majority of articulation errors. Fives can learn new articulations at about the same rate as sixes, but they learn them less accurately. Tongue-thrust swallow (low forward tongue and a slightly depressed mandible during swallowing) appears normal among fives and sixes with the sounds t, d, l, n, and z articulated in the dental and interdental position. The vowel oe is learned gradually through successive approximations to the model utterance. Consonants are learned in a more dichotomous fashion than vowels. Almost all kindergarten and first grade children can produce h, with markedly fewer producing k or both h and k. Disruption of taction does not alter the total number of misarticulations, the number of misarticulated consonants and vowels, or the number of distortions, substitutions and omissions. Before age five various types of r--

prevocalic, intervocalic, stressed vowel, and unstressed vowel--develop at different rates. With an increase in age, the child's approximation of the prevocalic r develops systematically in the direction of correct production. Paralleling development toward correct production, the child's articulatory pattern becomes more stable. High articulation abilities are associated with high IQ. Findings are contradictory regarding the effect of training programs, with Brigham finding that under fives do not profit from training and Byrne finding that fives make higher articulation scores after an experimental program in which MSES and LSES children made greater gains than HSES while HSES maintained the highest scores (Brigham, 1967; Murray, 1962; Philips and Harrison, 1969; Byrne, 1962; Bzoch, 1965; Locke, 1968; Irvin, 1967; Sherman and Geith, 1967; Weiss, 1970; Locke, 1969; Bricker, 1967; Bloodstein and Gantwerk, 1967; Goldman, 1968). Eleven out of thirteen studies on articulation are based on a population undesignated as to SES. The majority of data are also based on children of mixed ages from undesignated ethnic background.

Behavioral objectives.--Fives can learn new articulations but they do not always learn them accurately. Substitutions comprise the majority of their articulation errors. Fives articulate the sounds t, d, n, and z in the dental and low interdental position. Almost all fives can produce h, but many cannot produce k or both h and k. Fives acquire a more stable articulatory pattern as they develop toward correct production.

Imitative responses

Summary of data.--Echoic behavior shows a decrease in frequency of errors for each age between three and five with the specific errors made becoming more consistent. The more frequently sounds appear in the English

language and in the repertories of infants, the less frequent are the errors. More errors are associated with the place of articulation than with either the manner of articulation or the voiced-voiceless dimension. Imitative skills are important in the process of vocabulary elaboration. The process of imitation used in imitating non-English sounds is not different from auditory memory span but differs slightly from auditory proficiency (Brigham, 1967; Locke, 1968; Bricker, 1967). Data are based on populations from undesignated SES in two of the three studies. The majority of data are also based on mixed ethnic groups, and only one study is of five year olds exclusively. For further support for the importance of the child's environment in speech production, see the section on language.

Behavioral objective.--Fives imitate the sounds of their environment, making fewer and more consistent errors on the sounds they hear most often.

OBJECTIVES AND RATIONALE--COGNITIVE DOMAIN

The larger volume of data in the cognitive domain has made possible the development of behavioral objectives in more categories than in the psychomotor domain. Objectives could be developed in eight of the ten categories: attentional processes; ability, specific; concepts; language; memory; mediational processes; perceptual processes; and general cognitive. The two categories not included are intelligence and creative processes. Intelligence was excluded because the data in that category are largely test results which name the test used but do not give any specific behavioral data. The data on intellectual processes have not been omitted but appear under other categories such as concepts, mediational processes, language, and perceptual processes. Data categorized under creative processes have been reclassified into the affective domain as a subcategory under intra-psychic factors.

Some of the summaries of data in the cognitive domain are very long and grouped into subcategories. Where this is true, the references have been grouped with the content to which they refer rather than placed at the end of the category. Most of the objectives in this domain are better supported than those in the psychomotor domain.

Attentional processes

Attention

Summary of data.--Distribution of attention is a function of novelty and familiarity. Varying the stimulus by changing the size, shape, and/or color increases attending. Repetitive use of the same stimuli is fatiguing

and less interesting, thus reducing attention. When children are asked to perform in response to commands, the correct performances increase with age between three and four and one-half. Commands which are successful in regulating the child's behavior have simple syntactic structure, require simultaneous attention to a smaller rather than a larger number of factors in a situation, and the behavior they instigate extends over a shorter rather than a longer period of time. Visual attention span is an area of considerable deficit among DADV fives; however, severely subnormal fives are responsive to training in focusing of attention. Consistently managed attentional training is uniformly superior to inconsistent attentional training (Bushell, Wrobel, and Michaelis, 1968; Dodd and Lewis, 1969; Palmer and Others, 1968; Hendrickson and Muehl, 1962; Bryant, 1967; Leckart, Briggs, and Kirk, 1968; Clapp and Eichorn, 1965; Santostephano and Stayton, 1967; Cawley, 1966; Davol, Hastings, and Klein, 1965; Beiswenger, 1968). Data are for the most part based on studies of DADV and mixed SES children of mixed ages. Little information was found on fives specifically. Attention as presented here applies strictly to the attention of the individual for a specific task. In applying this information in a classroom, it must be recognized that the distracting factors of a group setting must also be considered.

Behavioral objective.--Five-year-old children can attend to the novel, bright, or unusual characteristics of an object but quickly tire of responding to the same object, even if it were interesting to them in the beginning.

Ability specific

Reading ability

Summary of data.--The findings which are summarized here are divided into sections on general reading ability, prediction of reading ability, reading readiness, early reading, and early school admission.

Threes do not learn to read well enough to be tested on a standardized test but they are able to learn to recognize words and letters of the alphabet. Fours and fives have only vague ideas of how people read, have difficulty understanding the purpose of written language, and have special difficulty understanding abstract terms. Prematures do less well than full-term children. Home prereading experiences such as stories heard or books read to them by their parents, family trips, dramatizing stories, "pretending to read," considerable contact with books, and television watching are related to first grade reading achievement. Reading at fourth grade is related to kindergarten teacher judgments and mental maturity, memory discrimination, motor control, specific adjustment behaviors, interest in books and reading, and work habits.

Reading skills show a clear progression during first year instruction, with children moving from initially zero-level competence to writing words from their reader or finding particular words with prompts by mid-year to word attack skills and clear recognition of word boundaries by late in the year. Self-correction of errors begins to become evident among fives who are learning to read. Short-term instructional experiments including informal reading activities, carefully sequenced letter training, a linguistic approach, prompted word recognition training, tutoring by sixth graders, and training in letter-sound association have all been found to lead to the

development of some reading ability by fives and to produce better results than word training, a phonetic approach, or no training. Experimental program effects in the Perry Preschool Project, Academic Preschool, Ameliorative Program, "Rule-example" approach, the Denver program, and home instruction using a guidebook and television instruction show improved reading abilities over the comparison programs or no instruction.

There are IQ related differences in reading achievement, with low IQ children appearing to do better in regular readiness instruction. Boys manifest an increase in negative social behaviors during a formal program, and children who drop in rank from one testing to another are more likely to have recieved negative comments from the teacher (McNeil, 1964; Clay, 1969; DeHirsch, Jansky, and Langford, 1966; Downing, 1969; Tyler, 1967; Cobb, 1970; Bereiter, 1967; Sutton, 1969; Jeffrey and Samuels, 1967; King, 1964; Dreyer, 1968; Duell, 1968; Frager and Stern, 1970; Hubrig, 1967; Bereiter and Englemann, 1966; Academic Preschool, 1969; Osborn, no date; Karnes, Hodgins, and Teska, 1969; Gruber, 1966; Kelley and Chen, 1967; Mason and Prater, 1966; Weikart, 1967; Perry Preschool Project, 1969; Miller, W., 1969; Kjeldergaard and Frankenstein, 1964; Morrison and Harris, 1968; Anastasiow and Others, 1970; Gordon, 1966; Reid, 1966; Brzeinski, 1964).

Measures which may be taken at the kindergarten level which are predictive of reading achievement are teachers' ratings, CA, preschool education, self concept and ego strength, and psychological test scores. Measures which add little or no predictive value are intelligence test and creativity test scores, Metropolitan Reading Readiness Test, Gesell Developmental Readiness Test, and Bender-Gestalt Test. SES is a significant predictor variable of second grade reading achievement but not of first grade reading. There is a positive correlation between reading level and IQ and perception,

but reading level cannot be safely predicted on the basis of the kindergarten level of perception. Teacher, psychologist, and psychiatrist raters who attempt to pre-identify children who will be under- or overachievers are better at spotting the underachievers (Keogh and Smith, 1969; Wattenberg and Clifford, 1964; Hirst, 1969; Hirst, 1970; Smith and Bissell, 1970; Mayans, 1967; Cohen, 1963; Marantz, 1967; Henderson and Long, no date).

Reading readiness in the five year old is associated with maturation, visual and auditory language stimulation, stimulation of creative thinking, greater preference for mothers among girls and among Anglos, less identifica- with teacher among boys and greater realism for size among Anglos. Some differences in readiness are also attributable to IQ variations. Various techniques for facilitating reading readiness which have shown positive results are the AAAS reading readiness program and the Edison Responsive Environment. The systematic use of workbooks has met with mixed results, with some investigators finding accelerating effects and others finding no advantage. Full-year kindergarten and Head Start programs are more often found to produce gains than summer Head Start programs (Westinghouse Report, 1970; Gray and Klaus, 1965; DiLorenzo and Salter, 1968; Wolff and Stein, 1967; Miller, W., 1969; Gabler, 1964; Rosenthal, 1969; Wingert, 1969; Ayers and Mason, 1969; Levin, 1966; Hyman and Kliman, 1967; Oakland Interagency, 1964; Block, 1968; Hess, 1966; Angus, 1962; Breon, 1967; Hernandez, 1965; Silberberg, 1967; Hellerick, 1965; Schoephoerster, Barnhart, and Loomis, 1966; Shapiro and Wilford, 1969; Martin, no date; Torrance and Aliotti, 1968; O'Donnell, 1968; Johnson, 1965; Henderson and Long, no date; Jacobs, 1967).

Children who read at primer level when entering first grade have been read to extensively and have a personal interest in reading. They come from homes in which the fathers are skilled workmen, clerical workers, or

professional workers and most of their mothers do not work. Early readers have higher than average mean IQ's and about two-thirds have older brothers and sisters. A high percentage of these children ha been taught to read either at home or in kindergarten. They maintain their above average reading achievement at least as high as third grade with the advantage increasing for the less bright and decreasing for the brightest over the three year period. Recognition of vocabulary is somewhat of a problem in first grade, but the children quickly master pronouncing and oral reading skills (Sutton, 1968; McCracken, 1966; Durkin, 1966; Plessas and Oakes, 1964; Ylisto, 1968).

Early admission of children to kindergarten has been studied using ADV groups and children of undesignated SES with conflicting results. The advantage of entering kindergarten as an older rather than a younger child is borne out by Gott, Stahuber, and Weiss,. However, Miller, Hobson, and Braga have found that the underage children are as successful in later school life as children admitted at the normal age. School adjustment and achievement do not appear to be the result of CA but rather of a combination of factors. Both MA and SES are more highly related to success in first grade than CA, although CA is related. When early admission is based on mental ability, younger children generally achieve at a level commensurate with older children into the intermediate grades on academic and non-academic ratings. Teachers who do and who do not teach the children in first grade are generally unfavorable to early admission. A high percentage of parents of late age children are unfavorable to the program (Miller, 1962; Hobson, 1962; Gott, 1964; Stahuber, 1961; Weiss, 1962; Allen, 1968; Braga, 1969; Loughlin, 1966). By far the majority of data in this section are based on fives with a large number of studies including fives and older children as opposed to fives and younger children, which is much more common in

other parts of the report. All SES levels are included, with data on DADV children concentrated on reading readiness and instructional programs. Missing from the data are long-term follow-up studies of instructional approaches with DADV children.

Behavioral objectives.--The five seems to be in a transition period regarding the acquisition of reading skills. Although there are fives who can be taught to read, there are also fives who do not understand what reading is all about. Fives listen to stories or books read to them by adults; they dramatize stories; and they pretend to read. They also have an interest in learning to read. (The dilemma which must be resolved by the adult regarding fives and reading is not whether fives can be taught to read. Obviously, many fives can be taught to read. The most significant issue is whether fives should be taught to read, and to resolve it the child's behavior must be viewed in a larger perspective, which includes his total maturation. Specifically, his language ability, creative ability, motor ability, his self concept and specific adjustment abilities as well as his motivation to read must be examined.)

Concepts

Objects

Summary of data.--The majority of studies on preschoolers' concepts deal with the nature and attributes of objects; a smaller group concerns number concepts; and only a few studies treat concepts of time, causality or space. A miscellaneous grouping covers some culture-bound concepts. The bulk of material on concepts of objects has necessitated further breakdown into a number of object related subcategories in the organization of

this presentation. These subcategories form the basis of paragraphing throughout this section.

Under fives do not handle oddity problems as well as do fives. Similarly, the accuracy of under fives is poor on judgments of sameness and difference, while increasing accuracy characterizes fives. Under fives will motorically match based on similarity but do not deal adequately with same and different as verbal concepts. The youngest age for oddity problems falls somewhere between three and six years and no earlier than six years for conditioned oddity problems (Abravanel, 1968; Martin and Others, 1969; Gollin and Shirk, 1966; Hill, 1962; Saravo, Bagby, and Haskins, 1970).

The recognition of identity for pictures is better than that for nonsense forms. Nursery schoolers learn visual matching better if trained under conditions directly related to later performance expectations. For example, fours recognize difficult three-dimensional objects after direct training but not well with representational training. Such picture to object matching is better among ADV than DADV under fives. At this age many children are still learning the identity of coins, body parts, and other objects of common experience. Such recognition precedes the capacity to use the information in some tasks. Further studies on object recognition are covered later in this section under form, color, and size recognition (Ross and Youniss, 1969; Caldwell and Hall, 1970; Falk, 1968; Franklin, 1969; Robison, 1964; Jacobs, 1967).

The young child recognizes things, however, when they appear in the fashion in which he is accustomed to experiencing them; that is, they retain their identity but they are not yet conserved through various deformations of context or perspective. Fives learn up-down mirror images more easily than they do left-right mirror images. Boys excel over girls and older over

younger children in recognizing mirror-image reversals. Many children improve their judgments if given corrective feedback. The discrepancy due to unfamiliar orientation is true of tactile as well as visual stimulus presentation. Errors due to rotation and reversal decline to near zero by age eight for simple forms (Enterline, 1970; Cronin, 1966; Williams, 1969; Wohlwill and Wiener, 1964; Hunton and Hicks, 1965; Goodnow, 1969; Gibson and Others, 1962).

The recognition of differences has been studied frequently with this age group in terms of discrimination tasks and discrimination learning. Older children learn discriminations faster and more correctly than do younger. Higher SES fives learn faster than LSES. This is true even with illusory and ambiguous stimuli. The superior performances of the foregoing groups may be due to their greater tendency to use investigatory responses, since it is known that older children do investigate more. Further, training under fives to use investigatory responses does improve their discrimination performance. LSES benefit more than HSES from opportunity for familiarization with discrimination items, which again supports this interpretation. HSES children also begin to show a preference for a higher probability alternative. Non-reward is more helpful than reward in discrimination learning by young mental retardates. Trinkets as reward not only do not help but also may actually interfere with discrimination learning by acting as distractors. Discrimination learning is speeded up by an intentional set to learn simultaneous presentation of stimuli during training or by a shorter interval between stimulus and response. Younger siblings learn concepts from older siblings when they are put in direct learning involvement with them. Discrimination learning transfers better when the child is presented only new instances of an existing concept. A non-uniform ground compared to a uniform ground can interfere with discrimination. Discrimination can be either facilitated

or impeded by the child's already existing concepts, depending upon the congruence between the concepts and the new learning. Nevertheless, the variation accounted for by the existence of a prior concept may sometimes be negligible. An all-or-none model is inadequate for representing discrimination learning among fives. Their behavior is more conceptual; they are not simply stimulus discriminating what has previously been learned (Dæhler, 1970; Spence and Dunton, 1967; Silverman and Shapiro, 1970; Gollin, 1966; Covington, 1967; Bogartz, 1965; Bogartz, 1967; Alter, Eigen, and King, no date; Riese and Lobb, 1967; Marshall, H., 1969; Amster, 1966; Rieber, 1964; Gilmer, 1969; Pick, 1969; Gollin and Liss, 1962; Lee, 1965; Corah, Jones, and Miller, 1966; Suppes and Rosenthal-Hill, 1968).

By three and one-half years many children can completely group by simple dimensions and by four to six can match objects and collect small groups of objects having common features. Clustering of words increases from two to five years. The basis of grouping in younger children appears to be stimulus similarity whereas older children group more by function. Singularity/plurality sorting is easier for single and multiple objects than for duplicate features of an object. The language used to specify the basis that a child is to use to sort can be confusing, e.g., "fat" and "skinny" are beyond most threes and "bigger than" is absent in most under fives, although the latter is teachable. Classification is easier when stimulus compounding marks categories as different than when only a single dimension is relevant while the objects are similar in some other respects. DADV children label and sort into categories less well than ADV. Differing categorization teaching styles of mothers of differing SES levels may be directly responsible for some of this observed difference. Less reflective children less effectively categorize. Classification training improves the performance of both ADV and DADV children, as attested repeatedly by inde-

pendent investigators. In such training, providing a greater variety of instances leads to formation of true concepts (Ricciuti and Johnson, 1963; Kofsky, 1966; Rossi and Rossi, 1965; Birch and Bortner, 1966; Anisfeld, 1965; Greenfield, 1968; Johnson and Zava, 1960; Shipman and Hess, 1968; Shipman, 1967; Brophy, 1970; Hess and Others, 1968; Sigel and Olmstead, 1967; Sigel, Jarman, and Hanesian, no date; Corter and McKinney, 1966; Allerhand, 1965; Schwab and Stern, 1969; Hoffman, 1964).

While multiple classification is often thought of as more appropriate to later ages, under fives can perform bi-dimensional sorts on the basis of highly familiar attributes like color and form. Older conserving children, however, more than nonconserving perform multiple classification well. It is also the older and more verbal child who is most helped on bi-dimensional classification by relevant dimension training (Watson and Leinberry, 1967; Hooper and Marshall, 1968; Darnell and Bourne, 1970).

Another complicating factor in object concept is part-whole relations. As already mentioned, stimulus compounding facilitates sorting and recognition, probably because compounding more fundamentally reflects the nature of real objects as wholes. Only with greater difficulty does the younger preschooler cope with single attribute variation in the face of invariance in other attributes. The child thus is first impressed with wholes and only later moves to parts. For non-natural objects the reverse may be true, i.e., for aggregated features, perception of parts precedes perception of wholes. Fours and fives are beginning to make frequent references to part-whole in their descriptions of category inclusion. With young and retarded children, effective teaching aims to maintain conceptual wholes while directing attention to components (Hoffman, 1964; Elkind, Koegler, and Go, 1969; Sigel and Olmstead 1967; Sigel and Olmstead, 1968; Connor and Talbot, 1966).

The color attribute has been singled out for attention in numerous investigations. Fives color match but not equally effectively with all basic colors. They respond appropriately to similarity-dissimilarity instructions regarding color and can color classify. Older and more advantaged children are advanced in all the foregoing respects. Many children improve in color matching and classification and even more so in color naming following appropriate instruction. In fact, overall rate of color labelling can be accelerated dramatically by making natural reinforcers contingent upon labelling. Naming, matching, and recognition are all positively interrelated for color. Color preference and selective attention to color may facilitate or impede certain other learning and conceptual performances. These studies are summarized in greater detail under "Motivation.--preference" (Jacobs, 1967; Navrat, 1965; Parton and Fouts, 1969; McDaniel, 1968; Fisher and Others, 1969; Nimmicht and Others, 1967; Gross, 1964; Allerhand, 1965; Hart and Risley, 1968; Dale, 1969; Locatis and Smith, 1969; Lee, 1965; Corah, Jones, and Miller, 1966; Scholnick, Osler, and Katzenellenbogen, 1968).

The size distinctions large, small, tallest, widest, largest, smallest, and longest are commonly used by fives, while a smaller number of children use shortest. Many ADV fives handle the more difficult concept of middle size in a transposition task. Spontaneous verbal labelling is associated with greater success on the foregoing, while trained labelling seems of little benefit, at least until the child is beginning to label spontaneously. This greater difficulty of middle size implies that the size attribute is a dichotomized or discontinuous classification among younger children, whereas older children who size transpose to middle size are responding to what they perceive as an ordinal series. Extraneous stimulus variation interferes with learned size discriminations of under fives, but this can be offset by providing greater size contrast. This is true both for children

who do and do not use size labels. However, increasing the distance ratio in a test series decreases the transfer of a previously learned intermediate size problem. Size concept or attending can facilitate or interfere with other conceptual behavior, as is true also for color (Landau, 1969; Dutton, 1963; Bjonerud, 1960; Williams, 1964; McNeany and Keislar, 1966; Marshall, 1966; Rudel, 1958; Caron, 1966; Rosenberg and Birch, 1969; Brown, L., 1969; Elkind, 1964; Caron, 1967; Zeiler, 1966; Osen and Cole, 1967; Scholnick, Osler, and Katzenellenbogen, 1968; Reese, 1961; Reese, 1965).

Most beginning kindergarteners are familiar with a circle and most with a square. ADV fives with nursery school experience do not differ from those without such experience in form matching and naming, but DADV increase in form competency during a compensatory preschool experience. Form perception and sorting improve with age. Five to eight sided polygons are optimally discriminable because four sided polygons are less free to be unique and polygons of greater than eight sides are complex enough to create an information overload for five year olds. Pentagons and right angles are more easily learned than are acute and obtuse angles. Topological shapes are no more easily recognized than Euclidean shapes. Fives have no difficulty discerning roundness, pointedness, and squareness. Having available a greater number of representative models as instances increases form learning. Shape identity and similarity are of equal difficulty to learn for under fives. Form attention sometimes facilitates other form related tasks, but this is not invariably so. Letter concepts are treated independently below (Bjonerud, 1960; Williams, 1964; Heard, 1970; Allerhand, 1965; Harris, Schaller, and Mitler, 1970; Gollin, 1966; Brown and Goldstein, 1967; Scott, 1963; Lovell, 1959; Clos and Serafica, 1967; Rane and Berman, 1968; Corah, Jones, and Miller, 1966; Blank and Klig, 1970).

Several conclusions from the summaries on object identity and form concept apply to letters. Fives better discriminate letters when they are explicitly taught not to rotate them. Before they recognize that a letter can represent a sound, many fives can use picture symbols to form a sentence. Discrimination of letter-like forms is fairly easy for fours and improves with further maturity, but correctly matching letters and numerals is low among DADV. Experience with the Edison Responsive Environment removes the ADV/DADV differences in letter recognition and matching. Letter-difference training is superior to letter plus form-difference training. Preliminary warm up on relevant stimulus attributes plus incentives and penalties for correct and incorrect letter matching combine to produce rapid learning. Confusability of letters is a function of percentage of mutually distinctive features of letters. The addition of color to letters and words to be matched facilitates matching, probably by stimulus compounding as discussed earlier. Kindergarten emphasis on readiness skills produces a substantial increment in the recognition of upper and lower case letters. See also "Ability, specific: reading" for related materials (Caldwell and Hall, 1968; Levin, 1966; Gibson and Others, 1962; Ozer and Milgram, no date; Steg, Mattleman, and Hammill, 1968; Muehl, 1961; Hall, 1967; Redalia, 1969; Jones, 1965; Lehman, 1967).

Preschoolers' recognition of the age of persons progresses from no recognition to recognition on the basis of gross size to facial and other morphological cue (physiognomic) recognition of age. Such recognition is beginning to peak by age five. Younger children's age is easier to recognize than older or intermediate. Age recognition is associated with other indicators of social maturity, as is discussed under "Social perceptions and communications.--status perception" (Britton and Britton, 1969; Goldstein and

Chance, 1964; Kogan, Stephens, and Shelton, 1961). Of the various sections within the "Objects" summary, sampling procedures are invariably inadequate for establishing normative expectations for fives of differing demographic backgrounds, although they frequently are suggestive of sequences and of possibly reasonable expectations for fives. It is in this latter sense that the behavioral objectives are derived as possibly reasonable expectations.

Behavioral objectives--Fives can make judgments of similarity and with greater difficulty make judgments of oddity. Many can make limited use of same and different as verbal descriptors. The foregoing can be done more readily for familiar objects, less for nonsense forms; they can be done more easily for three-dimensional displays than for two-dimensional representations of them. Fives can acquire labels for familiar parts of wholes, e.g., parts of the body, and for other objects of common experience but such recognition and labelling will considerably precede the practical operations of using or reproducing these. They can match objects and retain their identity through minor deformations or spatial transpositions, but with less facility than for the same objects in their familiar orientations. Fives can, if they use active investigatory responses, discriminate illusory or ambiguous stimuli. Younger or otherwise less advanced children can learn concepts from more conceptually advanced children. Fives can group objects by an attribute which they already recognize, more readily for perceptual than for functional attributes and more readily where compounded attributes are similar than when only one is the basis of similarity. For extremely familiar or overlearned attributes such as form and color, fives can perform bi-dimensional sorts or classifications. Fives can match and classify different basic colors with varying degrees of success, and to a lesser extent can name colors. Most of them can improve in all three respects, especially in

color naming. Binary size distinctions are easy for fives; some fives can deal with intermediate size conceptually. Fives can conceptualize a variety of geometric forms within specifiable limits, and DADV can improve in form competency. Fives can match and recognize letters, but fewer fives can associate letters with their sounds, following explicit instructions. Fives can recognize relative age distinctions among persons, such as younger and older, and somewhat later recognize persons of intermediate age.

Number

Summary of data.--Matching of sets is one of the earlier number skills in this age range. It is related to size recognition if handled perceptually, or possibly to identity matching. The operation of one-to-one matching is furthered as the child's capacity increases to count concrete materials without skipping. Counting with representational material is more difficult. Initially, counting is unidirectional and non-reversible, suggesting rote counting or chaining of numbers into series without a rational concept of number or a concept of seriation or of ordination of number. The concept of ordination, which is applied somewhat earlier to size and age, may then become available to the child to structure the number series into a magnitude-ordered arrangement. This is probably signalled by such indicators as progressive refinement of the child's quantitative language, e.g., use of such terms as some, most, few, and more-than in this order; the appearance of comprehension of common fractions and ordinal numbers; by counting higher and counting by sets, e.g., by tens; and by the employment of addition and subtraction first with concrete and then with representational objects. Family teaching influences among ADV are apparently less systematic in this area than in the general use of language, so ADV children also show incidental

learning gains in a regular kindergarten. Systematic instruction in pre-mathematics and mathematics concepts provides even more substantial gains. Social class differences are sometimes found favoring the ADV over the DADV child on specific number tasks or overall number readiness, while at other times or for other tasks the differences are small. DADV children like ADV benefit considerably from preschool instruction in number. Much of this learning for both ADV and DADV proceeds from direct experience with concrete materials and apparently benefits from concurrent use of number language. Measurement operations and classificatory ordering probably both contribute to the development of number concepts. Thus, much material summarized under "Objects" above is applicable for guidelines to the sequence in which the child benefits from particular concrete experiences with objects or their attributes. Looking beyond the preceding sequential summary, many fives are reported in this literature as establishing one-to-one number correspondence of object sets; counting by ones (a few by tens) up to twenty with concrete materials or simply aloud but sometimes skipping for numbers greater than ten; copying Arabic numerals; using the ordinal references first, middle, last and less often second and fourth; recognizing written numerals within their range of counting; comprehending one-half, one-third, or one-quarter of something; performing simple addition and subtraction of concrete instances; understanding premeasurement concepts previously discussed under size; and using the number words most, some and to a lesser extent few and more than. Counting ability relates positively with virtually all other indicators of number development at this age. Many fives do not clearly grasp the concepts of U. S. coinage, although they may recognize and label particular coins (Heard, 1970; Ross, 1970; Deal, no date; Ozer and Milgram, no date; Pollio and Whitacre, 1970; McDowell, 1962; Jacobs, 1967; Rea and Reys, 1970; D'Mello and Williamson, 1969; Bjonerud, 1960; Scott,

Nelson, and Dunbar, 1967; Rossi and Rossi, 1965; Searle, 1968; Adkins, 1969; Corliss, 1968; Horowitz and Rosenfeld, 1966; Dutton, 1963; Carlisle, 1969; Daery, 1969; Montague, 1964; Baughman and Dahlstrom, 1968; Williams, 1964; Ginsberg, 1969; Haines, 1961; Scott, 1963). The same essential remarks which were made about the literature on children's concepts of objects can also be made for number. Here, however, despite the absence of age-comparative studies, a fairly clear picture of sequence emerges and is incorporated into the summary.

Behavioral objectives.--Many fives can equate concrete sets for number; count to twenty by ones both with concrete materials and aloud by rote; use the ordinal references first, last, and middle; recognize written numerals within the range of counting; comprehend one-half; perform simple addition and subtraction of concrete instances; and use most and some appropriately.

Time

Summary of data.--Time concepts are perhaps the most underdeveloped among fives. They have some acquaintance with clocks and less with calendars. After participation in social studies instruction, they use the concept of sequential time to understand past events and can transfer this concept to new situations. After summer Head Start, fives evidence greater awareness of time duration and increase in ability to define time and sequence concepts. Special plans and materials are more effective in imparting time telling concepts under planned rather than incidental conditions. Children of higher MA learn more about time under both intentional and incidental conditions, but younger and older children benefit from intentional

instruction. Because time concepts would be acquired at home mostly through incidental learning, which is less efficient, and because special instructional materials are unavailable there, it is not surprising that time concepts are underdeveloped before children enter a formal program. Thus, a greater responsibility for such instruction devolves upon preschool and school programs (Locatis and Smith, 1969; Bjonerud, 1960; Williams, 1964; Spodek, 1962; Allerhand, 1965; Stephens, 1964; Tajima, 1964). This area is virtually unstudied for under fives, for ethnic groups, and for SES levels. No data approaching normative descriptions are available.

Behavioral objectives.--The child can develop time telling readiness, a more accurate sense of duration, and a concept of sequential time or event sequence, but often only through a program emphasizing these particular goals.

Causality

Summary of data.--Many of the data on social-personal causality are summarized under the several subcategories of "Social perceptions and communications" and under "Intra-psychic: locus of control." Overall they suggest that fives possess an egocentric viewpoint from which they attribute to others personal characteristics which are congruent with the child's own wishes for himself, e.g., they perceive others as reacting less from self-interest and more from general benevolence or kindness, but as they mature after the preschool years, they abandon this view. Older preschoolers are beginning to attribute motives and intentions to others as the imputed bases of others' actions. Although the investigation of physical causality has been infrequent with American children, studies conducted by Piaget and others with children from other industrialized nations suggest

that the younger preschool child initially believes objects, which from the adult perspective are unrelated, participate with each other; from this proceeds the child's early perception of causality. He thus confounds subjective association with objective reality. He fails at this early point to distinguish desire and the sense of obligation from physical causality. Toward the end of the preschool period, he begins to form what appears to be a first conception of physical causality separate from his own feelings. This is illustrated by children's conception of "being healthy," which is too abstract for most fives in this form. Nevertheless, a sizeable portion of fives do understand how one keeps healthy through food, exercise, sunshine or combinations of these. By the end of the fifth year, most children evidence the beginnings of a concept of probability on a nonverbal task, although only one-third of fives verbalize an elementary probability related concept. Threes evidence neither capacity. Probability in its formalized theoretical sense is, of course, a culture concept which is not evident apart from culture transmission, but the origins of the capacity for this concept are already evident (Baldwin and Others, 1969; Piaget, 1967; Berger, 1960; Davies, 1965). Ethnic and SES related differences are virtually unexplored in this literature.

Behavioral objectives.--The five-year-old child can, because of his subjective sense of causality, conceptualize causality in personal, subjective terms; can begin to develop a distinction between physical causality and personal causation; can begin to attribute motives and intentions to other persons as a means of explaining and comprehending their behavior; can evidence nonverbally the beginnings of the probability concept.

Space

Summary of data.--Data on the perception of space, from which the concept of space is indirectly inferred, are not discussed here, nor are the child's drawings of spatial relations. Instead, aspects more related to spatial concepts instruction are highlighted. Following programmed social science instruction, fives increase their comprehension of such concepts as gulf and use authentic simple maps to analyze geographic areas. With instruction, fives can understand the earth as a globe. DADV fives perform well on concepts of location and space, especially following Head Start experience (Spodek, 1962; Portugaly, 1968; Jacobs, 1967; Allerhand, 1965). The studies represent only a minimal exploration of what preschoolers can learn about space. Piaget's work on the concept of space can serve to preclude trying out space concepts which are clearly beyond the five year old. In each of the areas explored, in fact, no fundamental sequential deviations from Piaget's descriptions are found, suggesting that they may be usefully consulted by persons working with American children.

Behavioral objective.--Fives can learn many geo-spatial concepts when they are presented in concrete, directly experienceable terms.

Culture concepts

Summary of data.--Some concepts which fives evidence seem less universal and more a reflection of particular features of their own culture. Children in their first school experience move from no information or misinformation about reading to a clear concept of the process. They name certain processes, pieces of equipment, and forms of animal life presented in science instruction. DADV children do less well than ADV on concepts of

nature objects. Left-right as a concept is subject to over-differentiation and under-differentiation by fives. Some attribute terms which arise directly from experience, e.g., sweet, sour, bitter, and cold, are restricted in use to direct physical description by under fives and only begin to be used figuratively from five years onward. They are, for example, rejected by under fives as descriptors of persons, whereas fives are less outraged by the suggestion of this possibility and will allow for the legitimacy of some such usage (Reid, 1966; Helfrich, 1964; Jacobs, 1967; Elkind, 1961; Asch and Nerlove, 1967). Systematic sampling of this area must be viewed as non-existent. Each of these findings is restricted to a single non-representative sample, with ethnic, age, and SES comparisons absent.

Behavioral objectives.--Fives can learn basic concepts that are fundamental to reading, science, mathematics and social studies readiness in a preschool program. They can begin to use simple physical attributes metaphorically. (For further details see "Ability, specific.")

Language

Production of syntactic structures, i.e., performance

Summary of data.--The child is using almost all of the structures which are used by the adults in the child's environment with increasing proficiency and complexity. There is a noticeable decrease in the use of restricted transformations (i.e., structures limited to a child's grammar). Some of the restricted forms are still evident in the overgeneralization of plurals and past tense of irregular verbs. The extent to which the child's

language develops is influenced by the linguistic environment which surrounds him (Brown, R., 1968; Cazden, 1968; Menyuk, 1963; Menyuk, 1964; Gaer, 1969; Brannon, 1968; Dorn, 1967; Bryant and Anisfeld, 1969; Suppes and Feldman, 1969; Marshall, 1961; Carpenter, 1966; Bronowski and Bellugi, 1970; O'Donnel, Griffin, and Norris, 1967; Baratz and Povick, 1968; Hernigan, 1968; Osser, 1966; Stern, 1966; Hawkins, 1969; Osser, no date). Anglos, Negroes and undesignated or mixed ethnic populations are represented in these data. More studies represent ADV or mixed or undesignated SES than DADV, although the DADV are represented.

Behavioral objectives.--Fives can produce simple declarative sentences, negate propositions and ask questions. They can produce negatives better than they can produce questions. The production of simple sentences is better than single embeddings (i.e., [I told him [that I would come]$_{S_2}$]$_{S_1}$), which will be better than more difficult types. Fives show a decrease in the use of substitute forms for the third person present or past tense of verbs, the omission of prepositions and articles, and the substitution of regular forms for irregular verbs and nouns. The child will show some increase in the use of adjectives, predicate nominative, adverbs, auxillary have, and nominalization (i.e., She does the washing and the ironing.)

Comprehension of syntactic structures

Summary of data.--By five the child understands many of the sentence structures and parts of speech used by the adults in the child's environment, but more complex structures are often confusing to him or misunderstood by him. Adjectives of number or relative quantity generally are not understood until five and one-half. Adverbs denoting position or direc-

tion in space, up and down, are understood by age three while adjectives denoting spatial relationships, left and right, are not understood until age six. The prepositions on, under and in are understood by age three; by, between and in-front-of are understood by age four. The grammatical categories of gender and number in pronouns are comprehended by 60 percent of the children at age four except for the he/she contrast and they. Plural/singular contrasts marked by a collection of nouns is comprehended by age five, but singular/plural contrasts of verbs, is and are, are not understood until age six and one-half when the plural is given as the stimulus. On card sorts with pictures according to singular and plural items, fives and sixes perform better when singularity/plurality is expressed in terms of single and multiple objects rather than when expressed in duplicate features embedded in an object. Threes comprehend noun phrases with two adjective modifiers. Simple imperative sentences and compound imperatives are comprehended at ages four to six.

Fours and fives understand active sentence types better than at least one other kind of sentence type. Fours are poorer on passive sentence types than on questions. Passive voice is generally comprehended by five and one-half or six. Negative construction is the poorest of all sentence types in understanding. Neither/nor as a negative is not understood until age seven. Center embedding (i.e., [I told George, [who was standing there$_{S_1}$] the joke$_{S_2}$]) and double embedding (i.e., [John said that [I think [Roger is a dum-dum]$_{S_1}$]$_{S_2}$.]$_{S_3}$) sentences are understood less well than simple sentences, with single embedding being intermediate. The order of difficulty for DADV fives on a comprehension task from most to least difficult is 1) relative clause; 2) negative, possessive, transformation subordinate (equally difficult); 3) passive, inversion, and conjunction (equally difficult); 4) adjective separation, and 5) transformational object.

The contrast between an adjective constructed by adding er to a verb and the verb is comprehended by five and one-half. Occasionally structures produced by a child are not always understood by him when produced by another person (Fraser, Bellugi, and Brown, 1963; Lovell and Dixon, 1967; Carrow, 1968; Gaer, 1969; Osser, no date; Anisfeld, 1965; Beiswenger, 1968; Chomsky, C., 1969). Ethnicity is unknown for these studies. With the exception of one study of DADV fives, SES is also undesignated. Threes, fours, and fives are specifically cited.

Behavioral objectives.--The five can understand active sentences and questions best. He understands negatives least well. There is an increase in the comprehension of adjectives of number or relative quantity, of contrast between an adjective constructed by adding er to a verb and the verb (e.g., swimmer versus swim), passive sentences, and plural/singular contrast (in that order). Difficulty with adjectives denoting spatial relations left and right, neither/nor as adjectives, and contrasts between singular and plural for the inflected verb to be will be evident until age six or seven.

Fives do not understand center embedding and double embedding (subordinate clauses) in sentences as well as single embeddings and simple sentences. (Indications are that adults working with preschool children should consider the complexity of their directions, instructions, and general language structure used with children.)

Vocabulary

Summary of data.--The ability to describe pictures or name pictures improves with age. The percentage of use definitions tends to decrease with

age but is still high at age five. Some increase in vocabulary will occur naturally. Programs with a goal to increase vocabulary do show positive results. The use of toys with Indian children in addition to the regular school curriculum results in an expanded vocabulary. DADV children differ from ADV children in vocabulary usage (Weener, 1966; Fratto, 1968; DiLorenzo, 1967; DiLorenzo, 1968; Moyer, 1968; Stein, 1964; Wolman and Barker, 1965; Savitz, Reed, and Valadian, 1964; Bereiter, 1967; Hooper and Marshall, 1968; Karnes, Hodgins, and Teska, 1969; Stearns, 1966; Milligan, 1968; Adkins, 1968; Anastasiow, Stedman, and Spaulding, no date; Stout and Langdon, 1964; Day, 1968). Data appear in both ADV and DADV sections across age groups. Almost all of the data occur in the category undesignated or mixed ethnicity with the exception of two studies of Negro children. Indians and Mexican-Americans were mentioned in several of the studies.

Behavioral objectives.--Fives use a large number of words on the basis of concrete use definitions. Fives can describe pictures in some detail. (While the use of descriptions of pictures will provide the adult with a limited indication of the child's vocabulary, growth in vocabulary might be determined in this way. The vocabulary of DADV fives can be increased through a variety of experiences.)

Mediational processes

Summary of data.--Included here are investigations of information processing, mediated generalization, sequencing in idea production, higher

associative processes, double alternation, labelling aspects of conceptual behavior, and reversal shifts. Intersensory processes and coordination may also be viewed as an aspect of mediation but are reserved for separate treatment under "Perceptual processes." Syntactic transformations, which are also a closely allied topic, are summarized under "Language."

Verbalization, but particularly labelling or attribute-related language, is associated with superior conceptual behavior. This appears to be independent of the qualitative aspects of sentences formulated by children. Instruction to label when the child does not do so spontaneously is not automatically associated with performance increments, but children asked to verbalize their solution benefit. The outcome is clearer if feedback and instruction to attend to relevant attributes are added to the instructions to verbalize. Once the child labels spontaneously, he learns discriminations better, recalls more new items, and is more able to learn intradimensional reversal shifts. Conceptual clustering of words is enhanced by visual or by audio-visual presentation more than by auditory presentation alone. This may serve to explain some of the ineffectiveness of verbal methods of inducing verbal mediation. Kindergarteners are much more likely than younger children to manifest intradimensional reversal shifts. Specifically informing, cueing, instruction on attributes, and focusing attention on relevant attributes all aid reversal shifting. It is, nevertheless, uncommon before five years of age. Children also reverse more readily for a preferred attribute than a non-preferred, probably because they are already appropriately attribute attending. This interpretation is consistent with that given under "Motivation: preference" regarding selective attention to stimulus attributes. Stimulus conditions which make attribute attention more difficult, such as the presence of a non-

uniform ground, interfere accordingly with reversal learning. Some investigators (e.g., Fritz and Blank, 1968) have claimed that reversal is not more difficult than non-reversal but is only a function of the training procedures used. Yet lower IQ children (MA held constant) and younger children more consistently engage in non-reversals than reversals. Also, reversal shifters show other mediational advantages such as better visual decoding, motor encoding and vocal encoding over non-reversal shifters. Further, prematurely delivered children show subtle dysfunctions of sequencing and other conceptual behaviors that rest upon mediation. Verbal mediation facilitates size transposition as discussed under "Concepts: objects." Further evidence favoring a developmental interpretation of mediational development is that object naming increases among fours and fives after training but is not elevated among younger children and that among under fives verbal free associations are more primitive, personal, sound determined, unrelated, or entirely absent when the child is asked to produce an association. These findings all accord essentially with Piaget's analysis of the parallel courses of language and intellectual development. Overlearning of an attribute impedes reversal among threes but helps four and one-halfs and older to reverse. This may be the case because threes condition and then less readily give up a rule, while older children use an operating rule more flexibly as it gains in mediated generality as an instance of some larger whole. Verbal rule guided behavior clearly improves from three through five years, with most older fives being able to use a related set of rules or commands given in advance to control their motor starting and stopping. Production of non-verbal mediators by fives is still quite low, but they can readily be trained to use visual models, for example, to guide problem solving. Sequential events such as probabilistic

or regular alternations of correct choices, are easier for fives than for younger children. Age five may be critical in the acquisition of double alternation rules. Most kindergarteners can arrange pictures sequentially to tell stories. These facts plus those regarding rule guided behavior above show the impact of mediational facilitation upon practical and academically-relevant behaviors in the child. DADV children have benefitted from programs aimed to improve their mediational efficiency. They object name and label better and spontaneously label more often after a structured than after an interest-based program. Specific emphasis on such linguistic elements as and, or, and not increases the correct applications of a rule by the DADV (Al-Issa, 1969; Stern, 1965; Blank and Bridger, 1964; Kastner, 1969; Lipsitt and Seranian, 1963; Kendler and Kendler, 1961; Keislar and Schutz, 1969; Horowitz, 1969; Milgram, 1968; Kendler, Kendler, and Wells, 1960; Kendler and Kendler, 1970; Sidman and Stoddard, 1966; Potts, 1968; Duell and Anderson, 1967; Blank, 1967; Trabasso, Stave, and Eichberg, 1969; Gollin and Liss, 1962; Kendler, Kendler, and Leonard, 1962; Fritz and Blank, 1968; Kingsley and Hagen, 1968; Kendler and Kendler. 1959; Reese, 1965; Boat and Clifton, 1968; DeHirsch, Jansky, and Langford, 1966; Marshall, 1966; Wertheim and Geiwitz, 1966; Gottschalk, Bryden, and Rabinovitch, 1964; Gollin, 1964; Kessen and Kessen, 1961; Zach, 1964; Eimas, 1969; Naughter, 1968; Beiswenger, 1968; Corsini, Pick, and Flavell, 1968; Pufall and Furth, 1966; Green and Myers, 1968; Levin, 1966; Day, 1968; Dickie, 1968; Viney and Varner, 1967; Keislar and Stern, 1969). The greater part of these studies fail to designate SES. A smaller number deal with either ADV or DADV children. Ethnicity is rarely ever examined. Age, however, has received systematic attention. The failure to provide critical information on sample characteristics and the rarity of comparative studies

(except as regards age) weakens the usefulness of this literature for the formation of behavioral objectives.

Behavioral objectives.--Fives can use verbal and nonverbal mediators, although specific instruction may be necessary in the former instance and essential in the latter. Fives can process sequential events in the form of information input to be judged, meaningful materials to be sequentially arranged, and rules to be followed. Fives can convert easier recognition and discrimination abilities into more reversible conceptual tools under appropriate instruction. Irrespective of overall linguistic quality, fives can increase appropriate labelling of objects and attributes. Fives can verbalize their solutions to problems.

Memory

Shortterm memory

Summary of data.--Threes and fours cannot remember as long or as complete language forms as fives, although the performance of fives drops sharply in recalling forms more than five phonemes in length. Recall of test items for fives also shows a sharp decrease in correct answers when more than five items or pictures are shown between the initial presentation of the item and its test recall. Fives who engage in overt labelling perform better than those who do not, although fives given a memory aid do no better than those not given a memory aid. Pictures are better retained by fives than nonsense figures. Fives cannot recall nonsense strings of words as well as threes and fours. DADV fives drop below ADV fours in performance as string length increases for more complex language forms (Horowitz and Horowitz, 1967; Salzinger, Salzinger, and Hobson, 1967; Atkinson, Hansen,

and Bernbach, 1964; Kingsley and Hagen, 1968; Ross and Youniss, 1969). These data seem evenly divided between ADV, DADV and undesignated or mixed SES categories. One study is specifically of Anglos. The others are of undesignated or mixed ethnicity.

Behavioral objective.--Fives can retain up to five distinct pictures or language forms five phonemes in length. Fives' shortterm memory ability decreases sharply when more than five items or pictures are called for.

Recall

Summary of data.--Recall is positively related to CA, number of trials, size of stimulus, and recency of the presentation. Recall also relates to the method of stimulus presentation and organization of stimuli and either facilitates or interferes with memory, depending upon the organization of the material. Serial ordering appears during the fourth year. The serial recognition memory processes in young children are similar to those in adults. A serial order display can be reproduced better after six months than immediately following presentation. Fives can maintain sequences without perceptual support. By five and one-half years, the span of immediate memory approaches an upper limit, but the range of experience which can be integrated by a series of operations does not. Middle and high memory ability children show clear cue position selection patterns operating, while children of low memory ability appear to be selecting cues randomly (Rossi and Rossi, 1965; Rossi and Wittrock. 1967; Calfee, 1970; Pufall and Furth, 1966; Dahlem, 1969; Altemeyer, Fulton, and Berney, 1969; Potter, 1966; Weissglass, 1966). The undesignated or mixed SES category contains all this data.

Behavioral objectives.--Fives give evidence of using cues for selection purposes on recall tests. Fives can increasingly recall sequences without perceptual support.

Perceptual processes

Visual

Summary of data.--There is a rapid linear increase from three to five in visual recognition of a cue that is moved through several spatial transformations before the judgment is made. Fours and fives require greater image resolution by focusing before they recognize familiar objects than do older children. Relative position is a highly significant factor for sensory coordination of up-down figures and left-right positions. Fives are better able to recognize right-side-up figures and pictures. With increasing age, top to bottom scanning plays a progressively greater role and less reliance on focal point location is observed. The clearer and more complete the object, picture or shape to be defined, the more correct responses or descriptions fives are able to make. The absence or presence of contrasts does not affect the results. Size of cues and SES differences are significant factors when ADV and DADV are compared. Letter matching and letter discrimination seem to be the most difficult and last forms to be mastered. Both are fostered through discrimination training, using tracing as the method, and through letter matching at age five, although not necessarily at earlier ages. Identification time of matched and unmatched pseudo-word pairs is faster with vertical than with horizontal presentation. Fives, both non-readers and beginning readers, attend to the first letter of a word string first and the last letter second. Recognition is based on individual letters rather than word shape. An increase in printed letter discrimination

in younger children is noted with the use of three-dimensional letters as well as tactile stimulation, tactile tracing, and manipulation. Letter discrimination training is superior to both relevant shape, relevant letter training and irrelevant shape, relevant letter training. DADV children measure low on ITPA pretest of Visual Decoding (Babska, 1965; Garloff, 1969; Ghent and Bernstein, 1961; Brooks and Goldstein, 1963; Ginsberg and Gamlin, 1967; Miller, 1969; Baikie, 1969; Wheelock and Silvaroli, 1967; Dappman and LaPray, 1969; Weissglass, 1966; Marchbanks and Levin, 1965; Huttenlocker, 1967; Thornberg and Fisher, 1970; Berger, 1969; Jensen and King, 1970; Kanneigieter, 1970; Cawley, Barrow, and Goodstein, 1968; Hillery, Lindgren, and Remstad, 1969; Kerpelman and Pollack, 1964; Strang, 1967; Dodd and Strang, 1966; Elkind and Weiss, 1967; Muehl, 1961; Anastasiow, Stedman, and Spaulding, 1970; Samuels and Jeffrey, 1966; Hooper and Marshall, 1968; Johanssen, 1960; Martin and Others, 1964; Braine, 1965). Those statements that deal with ADV and DADV children are comparative. Most of the data for this category are from the undesignated or mixed SES section.

Behavioral objectives.--The visual perception of fives continues to increase, with top to bottom scanning becoming more prominent. Fives can identify by matching or describing clear objects and pictures that are right side up. Fives increase in developing their ability to discriminate letter forms. Fives discriminate words on the basis of first and last letters rather than word shape.

Auditory-visual integration

Summary of data.--Rapid growth in auditory-visual integration is observed from kindergarten through second grade. Both cueing and more thoroughly informing fours and fives improve transfer during training, but

only informed children transfer their prior cross-modal performance. Visual and audio-visual properties are better than auditory alone for producing word clusterings into conceptual categories (Buch and Belmont, 1965; Blank and Bridger, 1964; Horowitz, 1969; Gardner and Judisch, 1965; Blank and Bridger, 1966). There is no information on DADV children in this section.

Behavioral objective.--Fives give evidence of integrating or transferring across visual and auditory stimuli.

General Cognitive

Problem solving and logical thought

Summary of data.--Sophistication of responses in problem solving increases with age and SES level. A significant increase occurs between ages four and five. Development appears similar to conservation development, although relationships between conservational and logical thinking are not clearly established. There appears to be a decrease in disorganized behavior and a shift to information seeking, although transfer from previously solved problems does not occur automatically. While verbal hints alone are largely ineffective, manipulation of objects and tactile stimulation are effective. Pattern matching behavior precedes development of organized behavior. There is a general increase in logical reasoning and a decrease in the giving of inadequate reasons for conclusions. Reasoning ability is most related to mother's education (Smith and Roth, 1960; Englemann, 1967; Almy, Chittenden, and Miller, 1966; Feinberg and Laycock, 1964; Olson, 1966; Potter, 1966; Banta, 1969; Rothenberg and Orost, 1969; Shantz and Siegel, 1967; Stott, 1968). Most of the data are on fives.

Behavioral Objective.--Fives can examine an object and attempt to understand its use or relationship to other objects. They further are able to give more adequate reasons for their problem solving behavior than threes or fours. (Adults should provide opportunities for fives to engage in problem solving activities.)

Conservation

Summary of data.--The section on conservation includes subsections on conserving responses per se, part-whole relations, transitivity, conservation of mass or volume or weight, and conservation of number, in this order. Fives and MSES give more consistent nonconserving responses than fours and LSES. The use of candy as the material to be judged in number conservation tasks produces more correct responses. Children have no more difficulty attaining conservation across an illusory transformation than they encounter in attaining conservation across a transparently evident transformation. At kindergarten level just under ten percent of the MSES children manage all conservation tasks.

Children who pass a conservation task tend to score high on multiple classification and multiple seriation as compared to nonconserving children. More MSES children are found to be conservers than LSES children. After training in multiple classification and reversibility fives and fours increased in their ability to conserve correctly and their ability to verbalize underlying operations. Fives through sevens are in a highly transitional stage in conservation. Cognitive conflict, verbal rule instruction, language acquisition and multiple classification as treatments produced no differences in the conservation level of fours to sixes (Rothenberg, 1969; Ayabe, Gotts, and Hardy, 1970; Elkind, 1966; Baker and Sullivan, 1970; Almy, Chittenden,

and Miller, 1966; Hooper and Marshall, 1968; Sigel, Roeper, and Hooper, 1966; Baptiste, 1969; Mermelstein and Meyer, 1969; Coxford, 1964; L'Abate, 1962).

Parts are perceived at an earlier age than wholes. From ages four to nine there is a regular increase in age in percentage of children who perceive both parts and wholes. Children of above average and average intelligence perceive parts more easily than they perceive wholes. Descriptive part-whole responses are the most frequent for ages four and five followed in descending order by relational-contextual, categorical-inferential and descriptive-global responses. A verbal condition is superior to a pictorial condition in a class-inclusion experiment. More correct responses occur when "same" is used than when "more" is used. Fives in training programs which teach "same," "more," "less," or "longer" show an increase in conservation. Fours and fives show more conservation to questions inviting prediction than to those calling for an explanation or judgment (Elkind, Koegler, and Go, 1964; Sigel and Olmstead, 1968; Wohlwill, 1968; Blum 1967; Rothenberg, 1969; Pratoomraj and Johnson, 1966; Rothenberg and Orost, 1969).

The percentage of children who can show transitivity to length increases from age four to seven with a noticeable difference occurring before ages four and five. Transitivity in under fours is also shown when highly redundant stimuli are used. Illusion-distorted length is more often conserved by children over seven than under. Spontaneous performance of investigatory responses is not associated with conservation of length. There is little, if any, relation between verbal maturity, IQ, age and SES and scores earned by fours and fives on conservation of length, items involving the reflexive or non-reflexive property. Kindergarteners trained on transitivity show little

evidence of learning (Smedslund, 1963; Murray, 1967; Daehler, 1970; Carey and Steffe, 1969; George, 1970; Campione and Others, 1968; Younis and Furth, 1965).

Three Dimensional stimuli elicit more correct responses than do two-dimensional stimuli. Perception of quantity increases between ages three and four. Use of Gagne's learning set analysis resulted in an increase in substance conservation, weight and length. ADV children do better than DADV on conservation of volume. Sensori-motor support gives way to perceptual supports from ages five to six and one-half. No increases are found in mass-conservation tasks using plasticine. Training results in some evidence of conservation on the posttest with stability comparable to that of children who already conserved. Fives and sixes differ from older children for conservation of mass; fives through eights from older for weight; and fives through tens from older for volume. Specific explanations increase between ages five and six. Fours through sixes perform better on perception than on prediction tasks. High IQ and MA children make higher scores than low IQ and MA children (Estes and Combs, 1966; Kingsley and Hall, 1967; Hillery, Lindgren, and Remstad, 1969; Whiteman and Peisach, 1970; Elkind, 1961; Braine and Shanks, 1965; Ford, 1970; Young, 1969; Hall and Others, 1970).

As the number of objects to be matched increases, the performance of fives decreases. There is a tendency among younger fives to regard the longer row as more numerous. MSES children show more conservation responses than LSES children. Many fives who can make a one-to-one correspondence are unable to regroup for equivalence once the arrangement of objects within the set has been altered. Fours and fives can increase their judgments of equivalence in imitation and generalization although even then they fail to verbalize scorable reasons. Conservation of number can be modified under

special conditions. More conserving responses are given when candy is used as the material to be judged. (Salee and Gray, 1963; Wohlwill and Lowe, 1962; Rothenberg and Orost, 1969; Rothenberg and Courtney, 1968; Mehler and Bever, 1967; Pace, 1968; Rosenthal and Zimmerman, no date; Harper and Steffe, 1968; Ayabe, Gotts, and Hardy, 1968; Rothenberg, 1969; Baker and Sullivan, 1970; Hillery, Lindgren and Remstad, 1969; Whiteman and Peisach, 1970). DADV Negro children constituted the sample of these studies but no ADV Negro children were included in any of the studies. Approximately three-fourths of the conservation studies are undesignated as to ethnicity of the population studies. Thirty-five percent of the studies dealt with ADV populations, 22.5 percent with DADV, and 42.5 percent with undesignated or mixed SES. All three age groups appear to have been studied.

Behavioral objective.--Fives are able to place small numbers of chips to match the number of those placed by an experimenter. Some fives are able to regroup equivalent sets after they have been altered. (Adults ought to provide opportunities for children to group sets and match sets on a one-to-one basis. Adults should not expect children who can not perform these activities to do addition and subtraction exercises. The conservation experiments of Piaget can provide useful diagnostic tools for adults working with young children. Teaching of conservation seems of questionable value, since all normal children arrive at this point eventually, but it appears to be quite in the spirit of Piaget's work on conservation to provide the child with experiences that later will contribute to conservation. See Kamii and Radin, 1967, for an approach based on such considerations.)

OBJECTIVES AND RATIONALE--AFFECTIVE DOMAIN

Social Behaviors includes behavioral objectives for the areas "Aggression" and "Dominance;" "Imitation;" "Identification" and "Sex-typing;" "Resistance to Temptation;" "Transgression;" "Conformity;" and Controls," from Intra-psychic; "Dependency" plus "Attachment," from Intra-psychic; "Maturity;" and "Prosocial Behaviors" plus "Introversion/Extraversion". The balance of the original categories are dropped. This section is followed by a second major grouping, Social Perceptions and Communications, which includes: "Status Awareness," "Social Abstraction," "Person Preference," and a merger of "Emotional Communication" and "Affective Awareness". "Self-awareness" is removed to "Self Concept" in Intra-Psychic and "Social Perceptions, Other" is incorporated into "Concepts". A third major grouping, Motivation, begins with a new merged category "Types of Feedback the Child Can Use," which includes "Threat," "Failure/Success," "Reward Schedules," "Types of Reward," "Peer Effects," "Teacher Effects," "Higher Needs," and from Intra-psychic, "Locus of Control". Two additional Motivation categories are "Preference" and "Stimulus Variation," the latter including Curiosity Motivation. The final affective area, for which objectives are prepared, is Intra-psychic factors. The first of these, "Temperament," is composed of "Behavioral Pathology," "Orderliness" (persistence), "Activity Level," "Emotionality," "Reactivity," and "Adaptability to Demands". Other Intra-psychic factors are: "Creativity" (including "Creative Processes" from Cognitive), "Self Concept" (including "Self-awareness"), "Personality, Global," "Adjustment," and "Fantasy". The Intra-psychic categories, "Locus of Control," "Controls," and "Attachment", are relocated as noted earlier. "Humor" is dropped for insufficient data. A final over-all grouping, Social-cultual-familial Influences, and its subcategories were dropped because they

yielded no behavioral objectives for the child, although they could provide objectives for the family and for society at large.

Studies of affective domain characteristics more often refer to ADV and DADV status than is true for either cognitive or psychomotor domains. Ethnicity remains undesignated frequently and potential comparisons confound socioeconomic status and ethnicity frequently enough to preclude the making of many statements about the data. Studies of Anglo ADV far outnumber those of Negro ADV, while Negro DADV studies slightly outnumber Anglo DADV. Age is designated more often than not, permitting many age comparisons. Studies designed for age comparisons of affective characteristics are relatively more numerous than those for either of the other domains. Social behaviors are most often studied among ADV children. Among DADV and undesignated SES children, Social Behaviors and Intra-psychic factors are studied about equally often.

Social Behaviors

Aggression; Dominance

Summary of data.--Aggression and dominance remain the most salient sources of social behavior variation during the preschool years. These characteristics peak at between four and one-half and five and one-half years among ADV. The increase in aggression is accompanied by a parallel increase in friendly associations and contacts. These are correlated factors, since aggression and empathy are positively related among boys of four and five years, but are negatively related in older boys. They are unrelated throughout the ages four through seven years for girls. This may be due to the influence of peer reinforcement upon aggression, such that children who are more responsive to peer reinforcement for aggression become more active and aggressive. Some

investigators have viewed such behaviors as wholly negative or antisocial but these recent studies clarify that the preschool child who aggresses is frequently establishing new social contacts by this behavior. This may be less true for girls, since they show little change in aggression during a preschool program experience, no relation between empathy and aggression, and show a lower over-all rate than do boys. In some preschool programs children decrease steadily in open aggression while in others they show an initial increase followed by a decline, perhaps because programs allow differentially for the operation of the typical peer reinforcement pattern suggested above. An analogue of this increase of aggression during initial social contact has also been observed in the group play behaviors of psychotic children, who attack less and engage in more mutual observation following initial vigorous attacks. Attempts to locate the sources of out-of-home aggression within particular family patterns seem to be less productive than do efforts which examine the immediate context of the child's aggression. Nevertheless, punitive parental control techniques and parental permissiveness toward aggression appear to increase its overall rate. Generally, ADV children show less overt hostility than do DADV. It is not known whether the other relations above are true for DADV.

Overt aggression relates little to aggression in dramatic play or doll play among ADV and DADV children, although the relation between doll play and dramatic play aggression is substantial. Apparently a deficiency of fantasy production, rather than the presence of aggressive fantasy, is associated with acting out behaviors. Affiliation arousal decreases aggressive doll play in fives, but not in sixes, perhaps by attenuating fantasy in the younger group. Doll play aggression reaches higher levels in a smaller number of boys at four years and more moderate levels in a large number of boys at six years.

Boys' fantasy aggression exceeds girls' at both ages. The number of girls who fantasy aggress at these ages is about constant, but amount per girl increases at six. These age-related changes in fantasy aggression may be associated with the observation that, by five years, more controlled, verbal, and indirect forms of aggression are replacing earlier more diffuse physical aggression, although this relation is by no means clear. Doll play aggression increases over the course of a play session, and is greater both toward and from parent dolls than child dolls. Doll play aggression increases following social isolation, perhaps because this, unlike affiliation arousal, increases the child's involvement in fantasy. Bar pressing, which regulates or produces aggressive doll play, has not been altered effectively by film-mediated aggression. Aggression by nursery schoolers during play therapy may satiate molar aggression.

Frustration of preschoolers by parents appears little related to children's aggression, except that current restrictions and pressures are associated positively with girls' aggression. When fours are frustrated prior to viewing a filmed aggressive model, they are less likely to aggress than when they are not first frustrated. Further, frustration does not as readily produce aggression as does frustration preceded by exposure to aggressive models.

Adult modeling of aggression increases its occurrence in children, perhaps by communicating permission to aggress and thus weakening inhibitory tendencies. On the other hand, an explicitly non-aggressive model decreases children's aggression. Boys' imitative aggression is three times that of girls, but non-imitative motor aggression of girls is twice that of boys. Aggression is freely imitated without reward; it is regularly and predictably induced at five years. Adult male aggression affects boys more lastingly than does peer male aggression. The effects of film-mediated aggression

are even greater after a delay than immediately following its viewing (Emmerich, 1966; Marshall, 1961; Feshbach and Feshbach, 1969; Patterson, Littman, and Bricker, 1967; Sears, Rau, and Alpert, 1965; Vetz, 1960-61; Speers and Lansing, 1969; Marshall and Doshi, 1965; Dorman, 1967; Gordon and Cohn, 1963; Gordon and Smith, 1965; Kagan and Wimberger, 1967; Moore and Ucko, 1961; Ferguson, 1970; Hartup and Himeno, 1959; Wurtz, 1960; Lovaas, 1961; Saunders, 1961; Kuhn, Madsen, and Becker, 1967; Bandura, Ross, and Ross, 1963; Bandura, Ross, and Ross, 1961; Madsen, 1968; Bandura and Huston, 1961; Hicks, 1965). Over 60 percent of all studies deal with ADV, only two studies with DADV and the balance are undesignated. Ethnicity is unexplored, with all children being either Anglo or undesignated.

Dominance, submission, and resistance to domination within child dyads are not extremely stable across play sessions, but the relative positions maintained by four year olds show modestly high consistency for the former two and lower consistency for resistance. Dominance is predictable in new dyads. Ascendant behavior is lower among threes than fours or fives, independently of sex or SES. Instrumental assertion of DADV fives shows some generality to structured tasks and is associated with improved performance on selected Stanford-Binet items. On the other hand, resistance and refusal to cooperate by DADV children are strong predictors of poor school performance. The proportion of prior unfriendly to friendly acts within given child dyads is positively related to the physical distance maintained between pairs of children during free play. Maternal unqualified power assertion relates strongly to children's resistance to peer attempts to influence them, less strongly to hostility to peers, and still less strongly to power assertion toward peers. Paternal influence is exerted indirectly through its impact on mothers (Gellert, 1961; Gellert, 1962;

Frazier, 1964; Dorman and Rebelsky, 1969; Hess and Others, 1969; King, 1966; Hoffman, 1960). This small group of studies is about equally distributed over ADV, DADV and undesignated SES. Ethnicity is spottily sampled with Anglo children, while undesignated are most studied.

Behavioral objective.--No objective. (Adults should recognize that aggression is often a form of social approach at age five, and should avoid labelling it as "bad" and avoid intruding obtrusively into vigorous play, unless someone is actually being harmed. Adults are cautioned that children who do not learn early to be assertive may later lack intellectual assertion and social skill. Further, if adult intrusion is seen by the child as aggressive, this will increase rather than diminish his overt aggression--and it may well be that aggression copied from adults does not assume the same positive significance in the child's development as does aggression which arises in the normal course of peer interactions. Encouraging fantasy activity appears generally promising as an alternative to more disorganized and purposeless forms of aggression.)

Imitative behavior

Summary of data.--Imitation of aggression is less subject to the various influences discussed below for imitation of other kinds of behavior. Aggressive imitation occurs, for example, in the absence of reward and seems not to be enhanced by reward. The especially favored position of aggressive behaviors with respect to imitation may be due to the attention arresting nature of aggression. The plausibility of this interpretation is favored by the known importance of attention to the production of imitative behaviors. Also, many of the favorable conditions for imitation,

such as reward, may be interpreted as operating to focus attention. The greater effectiveness of film mediated aggression compared to live model aggression is likewise comprehensible in light of the greater attention focusing capacity of film as a medium. The low salience of peers at this age would then account for the fact that they are little imitated, compared with adults. Enlisting the child's internal control over his own attention, by prompting him to imitate, enhances his acquisition of imitative responses, but in this case, these responses show a decrement when he is released from instructions to imitate. Thus, intentional imitation appears to be less enduring, whereas incidentally learned imitation may show an actual increment at a time remote from the response's acquisition. Fives may retain imitative responses longer than do under fives, although directly comparable data are not available. Imitation is enhanced by a history of warm rewarding relations with the peer or adult model, more so as the model exercises future control. Nurturance may decrease direct imitation, while at the same time producing greater incidental imitation. See also "Dependency" for more on this. Nurturance withdrawal increases imitation when it is accompanied by signs of dependency increase. Nurturance may thus focus the child's attention upon the general properties of the model, while nurturance withdrawal focuses his attention on the particular conditions upon which nurturance is contingent. Being more attentive to the child, compared to less attentive, produces a greater amount of imitation. Seeing someone else rewarded for a behavior also increases the probability of its being imitated. Perceptions of social status hierarchies may, however, vastly influence this outcome, as when Negro children aggress less when a white model is rewarded than when he is not rewarded. Sex-typed behaviors may be imitated more for a same-sex model, whereas model sex may show no

effect for behaviors which are not sex-typed. If the child has opportunity to perform in an environment identical to that in which he has seen particular behaviors performed, he is more likely to engage in imitation, other conditions being favorable to this, than he is to imitate in a environment which differs from that in which the model performed. This is particularly the case regarding the sameness or difference of the objects with which the model has interacted and those available to the child (Bandura and Huston, 1961; Madsen, 1968; Bandura, 1965; Hicks, 1965; McDavid, 1962; Bandura, Ross, and Ross, 1963; Mukerji and Others, 1966; Marshall, 1961; Waxler and Yarrow, 1970; Grusec and Mischel, 1966; Hartup and Coates, 1967; Zahn and Yarrow, 1968; Stein and Wright, 1964; Mussen and Parker, 1965; Rosenblith, 1961; Bandura, Ross, and Ross, 1961; Thelen and Soltz, 1969; Fryrear and Thelen, 1969; Parton and Dubanoski, 1969). Of these eighteen studies, only one deals with DADV, the balance dealing slightly more often with ADV than with undesignated. Ethnicity is either Anglo or more often undesignated except in the case of a single study of Negro ADV.

Behavioral objectives.--The five year old imitates adults and to a much lesser extent peers. He can acquire new motor behaviors, especially, through imitation. (The focusing of attention upon the behavior to be imitated is probably the most critical aspect of learning management).

Sex-typing; Identification

Summary of data.--Father nurturance, rewardingness, and power, amount of father-son affection displayed, less strictness about noise, use of praise as a disciplinary technique, boys' perception of father dominance, high maternal authoritarianism, and low mother dominance all relate positively

to masculinity in boys. Maternal authoritarianism and dominance are associated with greater femininity in girls, while girls cross-identify when the father is dominant. ADV boys whose fathers are present as compared with those whose fathers are absent, are more masculine and maintain higher intelligence, while intelligence actually drops over time for ADV father-absent boys. Only among father-absent ADV boys does maternal encouragement relate positively to boys' masculinity. DADV Negro girls do not differ in sex-typing as a function of father presence or absence, but father-absent Negro boys are more dependent. Sibling influences on sex-typing are prominent among father absent children, with older brothers being associated with greater masculinity and older sisters with greater femininity for both boys and girls. ADV children with more siblings also show more knowledge of correct sex-typed choices. These variations may be due to older siblings serving as models and also exercising sanctions respecting sex-typed behavior. The prototype of sanctions is evident in ADV parents, especially fathers, who show more positive attitudes toward boys' sex-appropriate choices, but who take a more neutral stance toward girls' cross-sex choices. Parent sex-typed behaviors in turn seem to be influenced by the sex composition of their own offspring as a group. In families of all boys, fathers become more masculine and mothers more feminine as their children grow older, and these all-boy parents manifest more polarized attitudes toward sex-typing. Fathers of all boys differ more from fathers of all girls, than do mothers from the same families. However, when one girl is present in a group of brothers, the father is more feminine as his daughter is older. These effects upon parents can be expected to reflect themselves in their behavior both as sex-typed models for and as socializers of their children.

Sex-typed choice or preference of objects is low in boys until four years, but increases with age in both sexes, becoming evident before five years and preceding sex-role adoption. By kindergarten, sex is a primary basis for children's spontaneous preferential self-grouping. Father power is the critical factor affecting boys' sex-typed choices. Adult presence during choices among sex-typed toys does not influence under-fives of either sex or five-year-old girls, but inhibits sex-inappropriate choices among five-year-old boys. During these same years, older children of both sexes recognize more clearly the sex-typed character of objects, especially feminine-typed objects, and they can increasingly use boy and girl dolls to represent their classmates.

Sex-role adoption and identification come concurrently after sex-role preference among girls. Among boys, preference is followed by adoption and after that identification, with all three being positively related. Boys of higher mental age and more masculine physique are perceived by teachers as adopting more masculine behavior. A confounding factor in the development of sex-role adoption, however, is that femininity is indistinguishable from adultness. For this reason, the boy who is maturing most rapidly may also become more like his mother.

Sex-role orientation or identification is evident to a slight degree among some under-fives in human figure drawings or attributions made to the ambiguous figure IT. By five years, many ADV boys and girls show signs of same-sex orientation. This process probably proceeds more rapidly in girls, but as boys are catching up girls may level off and shift toward a more cross-sex orientation. Identification for both sexes seems to proceed most smoothly when parents are effective in controlling resources. A small amount of evidence on DADV boys of varying ethnic

background suggests that sex-role orientation develops more slowly than for ADV, while the development of ADV and DADV girls may not be different.

Opposite sex imitation may be absent and same sex imitation present to only a small degree in three through fives, with younger girls perhaps showing more same-sex imitation than do boys, although the sex-typed quality of the model's behavior appears to be of primary influence. As they grow older, both boys and girls increase in same-sex imitation. Some of the factors noted above, which favor masculinity in boys, parallel those summarized under "Imitation". More quiet, sex-typed play occurs among children of both sexes in the presence of a non-aggressive male model.

Traditionally, sex-role and moral-development have been theoretically linked. More masculine boys do reveal greater conscience development. Identification with parents affects responsiveness to parental control techniques, with boys responding to maternal strictness by inhibiting, for example, aggression possibly to lessen the threat of loss of love, whereas girls respond to strictness with modeling behaviors. Related data are summarized more fully under "Development of Controls", which follows (Mussen and Distler, 1959; Mussen and Distler, 1960; Biller, 1969; Hetherington, 1965; Hartup, 1962; Biller, 1968; Santrock, 1970; Schell and Selber, 1968; Lansky, 1967; Lansky, 1964; Hartup, 1964; Fryrear and Thelen, 1969; Bandura, Ross, and Ross, 1961; Vener and Snyder, 1966; Ward, 1969; Hirsch, 1967; Hartup, Moore, and Sager, 1963; Marshall and Doshi, 1965; Sears, Rau, and Alpert, 1965; Landreth, 1963; Lansky and McKay, 1963; Hartup and Zook, 1960; Endsley, 1967; Kohlberg and Zigler, 1967; Berkowitz, 1964; Datta and Drake, 1968; Gordon and Smith, 1965; Aldous, 1969; Morris, 1969).

Sampling is primarily from children of mixed or undesignated ethnicity,

less often from Anglos, with Negro children being specifically in only one study. Most studies deal with ADV children, a sizeable group with undesignated SES and a few with DADV. Age comparisons, however, are often made explicitly.

Behavioral objectives.--Fives can recognize sex-typed objects about which high adult consensus exists. This is especially true for feminine-typed objects. Fives can use these or avoid their use appropriately in play. Preference for sex-typed objects is present. Recognition and preference for sex-typed activities is not as clearly present. Many boys and girls are adopting more sex-appropriate behavior. A smaller number of children display a same-sex orientation, with more mature girls typically showing a tendency toward cross-sex orientation. DADV boys may develop sex-role orientation more slowly, although there is no reason to expect a delay in their sex-typed choices or sex-role adoption. An increase in same-sex imitation may be evident in both boys and girls.

Development of Controls:

Summary of data.--(Transgression): In under fives, leniency toward transgression may be a coping behavior to reduce unpleasant emotion associated with one's own transgression. Tension behaviors are prominent in children who peek compared to those who do not, when peeking is forbidden. Tension may also be elevated, but to a much lesser extent among non-peekers, simply as a function of exposure to a temptation. Those who peek and manifest high tension increase their liking for a preferred object more than do peekers who fail to manifest tension.

Mild intensity of threat for rule infraction causes ADV children to decrease their liking for a forbidden object, but under strong threat they

increase their liking. This effect may be quite long lasting (Ross and Ross, 1969; Brock, 1963; Aronson and Carlsmith, 1963). ADV and undesignated SES children of unknown ethnicity are sampled here.

(Conformity): A possible interpretation of the tendency of children to reduce dissonance or tension, by decreasing liking for a forbidden object, is that this is a manifestation of conformity in which the child adjusts his preference to match the adult's evaluation of how attractive the object should (not) be to him. Conformity of boys and girls does not differ before five years, but by five they become different due to a gradual increase in girls' conformity plus a sharp drop in boys' conformity. Preschool girls conform more to parents than do boys. The reverse may be true of peer conformity with girls being less conforming. Conformity as a means of coping is comfortably within the range of preschoolers' behavior when role expectations are clear, when there is consensus among adults, and when role prescriptions are readily enforceable. Failure of meeting these conditions leaves ambiguity that invites misbehavior (Orcutt, 1968; Starkweather, 1967; Kitano, 1962). Ethnicity is undesignated; most studies are of ADV or undesignated SES; age is explicitly compared.

(Resistance to temptation): By definition, temptation is a risk inherent in situations where the above conditions for conformity are not met. Individual differences figure prominently in children's resistance to temptation in unclear situations or those which frustrate the child's normal inclinations. Conformity as a means of resistance is facilitated by the child's motive to please the opposite-sex adult. Although DADV fives from father-absent homes do not differ in temptation resistance from those in father-present homes, a male rule giver is more effective with both sexes from father-absent homes, whereas a cross-sex pattern is evident for those from

father-present homes, as with ADV children. At four years, more active boys and less emotionally reactive girls (see also "Temperament") resist temptation more firmly. Attention withdrawal increases cheating for younger boys. Younger girls may resist temptation by escape or avoidance learning, resisting more under nurturance withdrawal than under nurturance, while older girls may resist to gain positive reinforcement. For this reason, older girls respond better to nurturance. Children, who conform successfully to rules not to cheat in a game, tend to be more punitive and less lenient. Five-year-old girls show almost twice as much hesitation as do boys in a temptation situation, suggesting that self control develops earlier among girls (Moore and Olson, 1969; Mumbauer, 1969; Burton, Maccoby, and Allinsmith, 1961; Burton, Allinsmith, and Maccoby, 1966; Saadatmand, Jensen, and Price, 1970; Ross and Ross, 1969; Ward and Furchak, 1968). Over half of these are studies of ADV, with DADV studied only once; ethnicity is explored in two studies.

(Controls): One aspect of development which reveals developing inner controls is the child's increasing capacity to reflect upon alternate possibilities before acting or choosing. Reflectivity is not, however, high among fives. ADV are more reflective than DADV fives. Social inhibition and motor impulse control may both evidence the same kind of changes in the organization of the child's behavior controls, although there is not yet consensus regarding the generality of impulsivity-reflectance at this age. In any event, overt evidence of reflectivity and motor impulse control is accompanied by favorable advances in the child's execution of more skilled performances. Another aspect of control is the capacity to delay gratification, which again is a favorable developmental sign. This sign appears later in father-absent children.

Overt self-verbalizations are effective sources of behavior control in fives, but covert self-verbalizations are not yet functional. Much evidence suggests that the child's increasing ability to follow directions and commands, which are given by others or eventually by himself, is a function of general development in verbal-symbolic control over behavior. This aspect is evidenced also in conceptual flexibility, as summarized under "Mediational Processes". Accompanying these language developments, are tendencies to attribute motives to others and to respect the will of adults as it is verbally articulated. Each of these contributes further to the development of sources of internal control.

The child now has an inner system of avoidance, at least. Guilt is probably not yet a principal source of regulation, but is beginning to manifest itself in girls who are securely identified with their mothers. Boys who are more resistive to temptation also are less overtly aggressive. Resistance appears, thus, to be part of the child's developing ability to behave in socially acceptable ways and especially to control antisocial aggressive impulses. The consequences of all of the advances in controls discussed above are positive for school readiness and performance. Some success in helping DADV children develop inner controls had been demonstrated by such educational approaches as the Autotelic Responsive Environment and the DARCEE programs (Mumbauer and Miller, 1969; Hess and Others, 1969; Kagan, 1966; Kagan, 1965; Nadeau, 1969; Wyer, 1965; Knights and Moule, 1968; Hayweiser, Massari, and Meyer, 1968; Beiswenger, 1968; Lovaas, 1964; Meichenbaum and Goodman, 1969; Piaget, 1967; Berkowitz, 1964; Lewis and Others, 1966; Ferguson, 1970; Nimnicht and Others, 1967; Klaus and Gray, 1968). ADV and DADV children are studied about equally often here, with undesignated SES equal to almost the total of the former two. Ethnicity

is examined three times for Anglo and two times for Negro. Age is more often undesignated or mixed than is typical of social behaviors.

Behavioral objectives.--Many fives can use conformity to reduce the risk of yielding to temptation. This conformity may involve the child's even changing his internal evaluation of the attractiveness of objects. Conformity works well in situations that are made non-ambiguious by consistent, explicit, enforced expectations. It is favored especially among children who have a motive to please the opposite-sex adult. Notably, fives obey those adults whom they respect and respect proceeds at this age from evidence of the adult's interest in the child. Some fives obey to avoid withdrawal of nurturance and others seek to gain positive social reinforcement. Some fives are becoming more reflective in choice situations; more show better motor impulse control and are following verbal commands; most avoid obviously dangerous objects and situations. They still rely upon overt commands or self-verbalization of directions, rather than being able to use covert self-verbalization to regulate their behavior. Some fives can increasingly delay gratification and control emotional expression. Fives comprehend much of what is socially acceptable. More socially advanced fives behave in more socially acceptable ways. DADV children generally lag ADV in the development of controls. (Reliance on overt verbalizations for self-regulation suggests that "quiet" and "well-behaved" are incompatible classroom objectives for fives.)

Attachment; Dependency

Summary of data.--Various components of dependency are associated with different home factors. For girls, the antecedents of dependency are:

for assurance seeking--high achievement demands from both parents; for being near, touching, and holding--low demands and restrictions without the masculinizing entrance of the father into the girl's rearing; for positive attention seeking--low infant and current maternal caretaking and a non-permissive attitude toward aggression. For boys the antecedents of positive attention seeking are low father participation and high aggression control by the mother. Girls of more nurturant mothers are less dependent. Dependency responses are susceptible to direct reinforcement, which is one possible source of their development. Brain damage or sensory loss which impairs the child's full spatial mobility is one clear source of dependency. Family instability and lack of emotional support of the child also appear to be factors in the development of dependency. These latter may operate by weakening the typical pattern of intense early parent-child attachment before three years, resulting in a later continuation of this less mature form of dependency past the time that it would normally be replaced by more mature forms. A vicious circle may develop, preventing the development of more mature behaviors through imitative processes, because dependent behavior serves as a more direct, primitive substitute for obtaining gratification than does imitation.

More typically, dependency decreases toward adults between three and five years, while dependent contacts with peers increase. Throughout its decrease toward adults, however, a positive correlation persists between early and later dependency. Older under-fives touch, hold, and seek to be near less, and seek more positive attention by verbal methods. These expressions of dependency are directed toward either sex adult, but with peers, toward a child of the same sex. The more mature form of dependency, attention

seeking, is uncommon in under-fives, and when it appears is a clear indicator of greater maturity. Instrumental dependency is associated with emotional dependency in very young children, but during the preschool period instrumental dependency becomes an alternative to automony. Non-autonomous boys appear to undergo a developmental transformation in the preschool years from aggression to instrumental dependency.

Experimental arousal of dependency by withdrawal of attention produces in preschoolers greater conformity to adult standards, although a decrease in conformity is predictable if the child interprets the arousing condition as rejection. More dependent children are less susceptible to childhood accidents, probably because of their diminished environmental exploration; they exert less achievement effort; and they are more nurturant toward others, if their own dependency is manifested as seeking help and seeking physical affection but are less nurturant if their dependency is expressed as being near. Low dependent preschoolers are better intentional learners and high dependent are better incidental learners. The former children show sharpening cognitive controls toward a model, while the latter take in a broader range of information but less selectively.

The importance of dependency in early childhood is attested by its being a major source of social behavior variation. It is more expressed by girls than by boys. That it is not a uniform trait is evident from the differing correlates of its various manifestations. Three-year-old boys showing more contact and attention seeking have lower non-verbal intelligence by school entry (Sears, Rau, and Alpert, 1965; Mussen and Parker, 1965; Speer, Briggs, and Gavalas, 1969; Klapper and Birch, 1966; Gouin Decarie, 1965; Bowlby, 1969; Stein and Wright, 1964; Smith and Connor, 1962;

Emmerich, 1966; Rosenthal, 1967; Burton, Allinsmith, and Maccoby, 1966; Karuven, 1963; Bitner and De Lessovoy, 1964; Crandall, Preston, and Rabson, 1960; Hartup and Keller, 1960; Ross, 1966; Ross, 1967; Wender, Pederson, and Waldorf, 1967; McCandless, Bilous, and Bennett, 1961). About 75 percent of these are studies of undesignated ethnicity children and the balance of Anglos. Slightly more than one-half are studies of ADV and the balance are of undesignated, except for one of DADV. Most are studies of under fives or of undesignated or mixed ages, with only two studies dealing explicitly with fives.

Behavioral objectives.--Fives are decreasing in dependency toward adults while perhaps increasing dependent contacts with same-sex peers. More socially mature fives increase in expression of positive attention seeking. (More dependent children can possibly learn better in an environment and through adult modeled actions, which minimize information that is irrelevant to the child's performance; the adult should be emotionally supportive. Less dependent children may learn better if what they are to do is explained or pointed out to them. For them, the adult should not make an issue of interpersonal responsiveness and should anticipate more autonomous action.)

Maturity

Summary of data.--Maturity can be identified in part with the appearance in children of nurturance, helpful behaviors, greater autonomy, self-assertion, competence, self-reliance, and the child's adoption of his parents' perspective (adult-role behavior). Other aspects of maturity are summarized

under the other headings of Social Behaviors. In each of the above respects, fives seem to have advanced beyond under-fives. DADV children lag ADV in several of these respects, but benefit considerably from Head Start participation. Montessori program experience also apparently fosters considerable leadership and independence in some children. In several of these respects, under-fives as yet show little evidence of maturity. This is true, for example, of helpful behaviors and nurturance which are manifested as giving affection, attention, reassurance, and protection to others. Autonomy, competence, and self-assertion may more clearly appear in under-fives and continue to increase among fives. The issue of maturity for some severely deprived children may, nevertheless, center upon much earlier developmental issues such as toilet training, self care, and feeding.

Among the DADV and ADV, as developmental indicators, detachment behaviors provide a more common, specific, transaction-free basis of comparison. Detachment behaviors relate to the child's increasing autonomy. These become apparent when the child begins crawling and later toddling away from his mother more often, across increasing distances, and for increasing lengths of time. This fact of physical distancing as one of the earliest manifestations of autonomy points out why "being near" is associated with more immature forms of dependency. Detachment behavior leads apparently to the emergence of the more mature forms of attachment discussed in the preceding section.

The influence of particular adult behaviors on these developments has been examined extensively. Probably the social immaturity of the DADV child is due to multiple factors, but, among these, the high incidence of father-absence; lack of training children to perform set tasks; and possibly vested maternal interest in keeping her child at a more emotionally responsive,

infantile level figure prominently. More mature, competent children have parents who exercise socialization pressure, communicate expectancies for maturity, engage in verbal exchange with the child, grant independence, and deal with the child at his level of understanding. Early evidences of autonomous behavior are associated with maternal expectations of assertiveness rather than of practical behavior. A cross-sex effect is evident in assertiveness, with mother expectations influencing sons more and father expectations influencing daughters more. All of the above-listed influences are reflected in the child's maturity behavior when he enters a preschool program (Smith and Connor, 1962; Hartup and Keller, 1960; Emmerich, 1966; Norton, 1969; Fleege, Black, and Rackaaskas, 1967; Wortis and Others, 1963; Rheingold and Eckerman, 1970; Powell, 1961; Baumrind and Black, 1967; Nakamura and Rogers, 1969; Willer, 1968; Ferguson, 1970; Sears, Rau, and Alpert, 1965). Almost two-thirds of these studies are of ADV of undesignated ethnicity and of designated age. Of two studies of DADV, one deals with Negro under-fives. Three undesignated SES studies report age only.

Behavioral objectives.--Fives frequently manifest autonomy, self-assertion, and competence. Many increase in these behaviors, a few from a near zero starting point. To a much lesser extent, fives spontaneously give affection, attention, reassurance, assistance, and protection to others. Some fives increase in these helping behaviors. Fives move away from parents more often, over greater distances, and for longer durations than previously. DADV fives lag more behind ADV in these than in some other respects. (As with dependency, adults should treat less mature and more mature children differently. Particularly immature fives probably require a continuation of adult closeness, supervision, and emotional

support, coupled with expectations for assertiveness, the granting of independence, and provision of opportunities to perform simple, responsible tasks. More mature fives probably can respond well to the other successful adult measures listed in the above summary.)

Prosocial behaviors; Introversion

Summary of data.--While these behaviors are closely related to "Dependency", "Aggression; Dominance," and "Maturity," they indicate more specifically the child's initiation of and capacity for sustaining peer relations. The interpersonal-impersonal orientation of the preschool child is a highly stable aspect of his social behavior. Under-fives, who are interpersonally oriented, are more negative and those who are impersonally oriented are more positive. At age five, the interpersonal-negative child is becoming more poised and the previously impersonal-positive is becoming socially insecure. Shyness at three relates negatively to verbal intelligence at five, while high responsiveness to persons at three is strongly associated with verbal intelligence at five. As noted under "Dependency", threes make more contacts with adults, but by five the contacts shift to peers. As the child increases his peer interactions from three to five, negative mood interactions with peers decline steadily, while negative mood interactions with adults increase. This relates rather clearly to the autonomy aspect of "Maturity". Even psychotic children, in contradiction to traditional clinical folklore, approach peers in a group situation, attempting to make contact. This eventually leads to the formation of an interactive peer group if the process is allowed to continue for some months.

As summarized in "Aggression", social approach begins with the more or less assertive initial contacts of under-fives; these gradually give way to more mutually interactive kinds of play. The forerunners of more mature forms of prosocial approach appear first in the dramatic play of under-fives as use of suggestion and mutual agreement, but as yet they are not evident in reality play. Fives use even more fantasy suggestion and agreement but do not yet use them in reality more often. In doll play, girls under five and at five exceed boys of both ages in using such constructive responses as alternatives to conflict, although both sexes are increasing in this respect. Now, through the medium of dramatic play, fives can, by this development, accomplish more interaction with peers without conflict. For reasons to be examined below, however, conflict continues to be the rule in reality situations.

The root problem in reality play, which prevents mutual accommodation, seems to be contention over limited manipulable resources. It is fantasy which first makes it possible for the child to decenter from the non-availability of enough particular manipulables and to make do by pretending through assimilation that those things which are available can meet the requirements of play. Later conflict centers around more attractive versus less attractive roles to be played and must be resolved in part by the child's capacity to take the viewpoint of the other. This last development is not far advanced by age five. This is perhaps likely to be the occasion for choice of playmates who because of their disposition to yield or resist or dominate make the continuation of play possible for a particular child. (See also "Person Preference", "Aggression," and "Development of Controls".) Concrete manifestations of this general problem appear, thus, in the areas of sharing and cooperative behaviors, to

which attention is next directed.

When cooperative versus competitive achievement behaviors are rewarded among fours in a situation where cooperation maximizes payoff, rewards for cooperation make it possible for children jointly to complete problems much more rapidly. Children are highly sensitive to reward cues for cooperation and competition, but are relatively insensitive to the need for mutual assistance and the possibility of sharing turns when the situation invites competition. In these respects, ADV Anglos and DADV Negroes and Anglos are alike. Here it is overcentration on a particular commodity which produces the undesirable outcome of conflict. Among threes through fives, DADV girls acquire least and DADV boys the most cooperative behavior under reinforcement, with ADV boys and girls falling at positions intermediate to the DADV groups. Cooperative behavior can, in fact, be shaped by reinforcement in as high as two-thirds of fives. Male fives initially may behave more cooperatively than will females, but boys retain more of a mutually earned commodity for themselves than do girls. Typically, nursery school and kindergarten children retain as much as 70 percent of a mutually earned commodity for themselves, leaving for their partner the smaller share. Only much later will equitable distributions occur. Sharing is not very much affected by peer dyads being of mixed ethnicity. Differences in rates of cooperative behavior of Negro, Mexican-American, and Anglo fives are not remarkable, some studies finding one and then another group to exceed others in such responses. In naturalistic studies, however, where systematic reinforcement for sharing is absent, ADV show higher rates than do DADV. Some evidence suggests that severely deprived boys have special difficulty acquiring sharing behaviors even under reinforcement. High age and intelligence both favor the acqui-

sition of sharing under reinforcement. Severely deprived children may learn sharing more slowly for these reasons. Also fundamental to this finding is the high rate of father-absence from these children's lives, since it is known that father nurturance is positively related to boys' altruism, generosity, cooperation, and sympathy, and that these child behaviors all relate negatively to child competitiveness (Emmerich, 1964; Bayley, 1968; Smith and Connor, 1962; Raph and Others, 1968; Honig, Caldwell, and Tannenbaum, 1969; Speers and Lansing, 1969; Marshall, 1961; Moore and Ucko, 1961; Smilansky, 1968; Piaget, 1951; Nelson and Madsen, 1969; Brotsky and Thomas, 1967; Vogler, 1970; Wasik, Senn, and Epanchin, 1969; Manning and Buntaine, 1969; Manning, Pierce-Jones, and Parelman, 1968; Handlon and Gross, 1959; Doland and Adelberg, 1967; Fischer, 1963; Rutherford and Mussen, 1968). Studies here deal about equally often with ADV, DADV, and undesignated. Under-fives are studied as often as fives and undesignated ages combined. Nearly one-half of the studies designate ethnicity, with Anglos and Negroes studied about equally often.

Behavioral objectives.--Fives who earlier have been interpersonally oriented and of negative mood are becoming more poised, in contrast to impersonal-positive children who become more socially insecure at five, unless there is adult intervention. Fives' negative interactions with peers decline as overall frequency of interaction increases. Fives can increase their use of suggestion and agreement through dramatic play, although an expectation of immediate transfer to reality behavior is unwarranted. Most fives can behave cooperatively and share more readily, when rewards and cues for cooperation are accentuated. (Adults must not expect fives to establish parity in sharing. Further help toward pro-

moting prosocial behaviors through play and fantasy may be obtained from the summary for "Fantasy".)

Social Perceptions and Communications

Status awareness

Summary of data.--This category includes studies of children's perceptions of ethnicity and SES. Perceptions of sex appear under "Sex-typing" and for age under "Concepts". ADV under-fives already recognize and reject pictures of LSES situations, while DADV children appear not to recognize or be concerned about depictions of low status. Despite this recognition, under-fives in biracial neighborhoods do not sort themselves on the basis of SES or other differences such as race or religion. Color meanings of negative for black and positive for white are already present in ADV threes and are acquired increasingly by children up through age five. DADV Negro preschoolers have these same color connotations, although less consistently than do Anglos. Color meaning responses can be modified experimentally, but the new meanings do not transfer to racial attitudes. Some evidence suggests that color meanings may, however, initially generalize to associations with race. Attempts to determine how early children are aware of race or ethnicity are often complicated by the measurement procedures. Indirect methods of inferring awareness, such as by whether the child avoids association with children who differ from him ethnically or by whether he is willing to admit that a racially mixed group of dolls constitutes a "family", usually result in the conclusion that the child has no racial awareness. Logically, however, such procedures do not rule out the possibility that the child is aware of race, but that this is not

a matter of consequence to him, so he ignores it. Other approaches, involving comparisons or statements of preference, more frequently suggest that racial awareness is probably present in many under-fives and in a clear majority of fives. In any event, parallel examinations of color meaning and racial awareness show that the latter develops more slowly. Prominent regional differences have been noted in children's racial awareness, as a function of family and culture emphasis on race or ethnicity. For this reason, local variations can also be anticipated. Awareness of race or skin color seems to increase as children enter school programs. Where faulty generalizations exist in children regarding race, more accurate concepts are readily formed at this age (Estvan, 1965; Gould and Kerckhoff, 1960-61; Neidell, 1966; Estvan, 1966; Renninger and Williams, 1966; Stabler and Others, 1969; Williams and Edwards, 1969; Stabler and Others, 1969; Abel and Sahinkaya, 1962; Morland, 1966; Stevenson and Stevenson, 1960; Diamant, 1969; Werner and Evans, 1968; Handler, 1966; Vaughan, 1964). The majority of these studies are of ADV, under-five Anglos. Negroes are sampled only once. Fives are sampled in three studies.

Behavioral objectives.--Most fives respond to black and white with negative and positive connotations, respectively. Many may have racial awareness. Fives show little evidence of racial prejudice, but they may be learning distorted conceptions of particular groups. Such misconceptions are easily modified in the direction of greater accuracy.

Social abstraction

Summary of data.--This category includes the development of social dialogue through egocentric speech, the use of double function terms to

refer to persons, and social desirability development. Egocentric or private speech, expressed as the percentage of total speech and defined as child vocalizations addressed to no apparent audience, declines from a high rate at two or three years to perhaps 30 percent at four, declining further at five. Percentages vary with task and child characteristics. Among children approaching age five, egocentric speech is higher during more cognitive tasks and lower during sensorimotor. The coefficient of egocentrism declines steadily for bright children during the preschool years, but for average children increases slightly from four onward, finally dropping at a later time. The coefficient is higher with peers during free play and lower in a task with a minimally responsive adult. The adult continues to be a focus of the child's communications throughout the early portion of the preschool period but social speech with strange adults declines from four years onward, perhaps because of increasing social awareness of the boundaries of communication with strangers. Despite this decline of the egocentricity coefficient, the absolute frequency of self-directed vocalizations remains fairly constant through the preschool years. Social speech and frequency of private speech (not percentage) are correlated at a moderately high level, suggesting that private speech is not presocial but parasocial; apparently the child's private speech represents not so much a lack of differentiation of self and other as it does a non-existence of the self's point of view prior to acts of social communication. This talking out loud by young children is generally viewed as a forerunner of thought as internalized speech. See also "Development of Controls" where the importance of this is emphasized. Although it is not specifically supported by these data, it seems plausible from the above trends that DADV children might show a developmentally, slower

appearance of a peak rate of speech egocentricity, followed by a later and more gradual decline. If this is so, emphasis in compensatory programs upon activities or routines which prevent the use of private speech might be seriously detrimental to the social and intellectual development of the DADV child.

Up through age five, children do not often use such terms as sweet, hard, cold, soft, bright, deep, warm or crooked with reference to persons, but understand them in their physical sense with reference to objects. ADV fives use these terms in a psychological sense in less than one-fifth of the possible cases, yet even this low rate represents a considerable advance over under-fives. Such developments may increase the child's capacity to comprehend people's motives by making attributions that go beyond the simple distinctions of goodness and badness. Comprehension of bad may occur in specific, isolated circumstances as early as two years. Good is generally understood by three or four years. Still, these terms are not used unerringly until about six years. In a parallel example, pictures representing good, bad, and neutral behaviors are discriminated at chance levels by twos, while by six years these are almost perfectly discriminated. At all ages, bad behavior is more easily identified than good. These attributions do not yet deal with the motives underlying the acts. In statements regarding persons, this recognition of the goodness and badness of characteristics has been called social desirability. Children by five years show a high level of comprehension of statements as depicting socially desirable characteristics, with girls developing in this area somewhat more rapidly than boys (Honig, Caldwell, and Tannenbaum, 1969; Kohlberg, Yaeger, and Hjertholm, 1968; Piaget, 1967; Asch and Nerlove, 1967; Rhine, Hill, and Wandruff, 1967; Cruse, 1966;

Cruse, 1963). One-half of these studies are of ADV and one-half of undesignated SES. Ethnicity is generally undesignated, with Anglos sometimes mentioned. Direct age comparisons are made explicitly in one-half of the studies.

Behavioral objectives.--Fives use private speech often during play with peers. For brighter fives, this behavior may be declining slightly, but for average, below average, and possibly DADV, the percentage is still increasing. A few fives are beginning to use such initially sensorilly-concrete terms as sweet, bright, and crooked to refer to psychological qualities of persons. Virtually all fives comprehend good and bad acts, and comprehend when a statement made about a person means that the person is good or bad. (Providing opportunity for private speech may make important contributions to self-control, fantasy, general cognitive functioning, and even popularity, as suggested in the next section. Dramatic play appears to provide a particularly conducive setting.)

Person preference

Summary of data.--Some inevitable overlap of content occurs between this category and the category "Status Awareness", among others, but the present emphasis is on interpersonal attraction or liking rather than on person perception. When choosing among racially discriminable photographs of children, Anglo and Negro under-fives favor white children. Through this procedure, Negro children reveal rejection of their own racial identity. These data, it should be noted, were collected prior to the current emphasis upon pride in "blackness" as a heritage. Use of

verbal praise whenever children make positive references to racially different children during story telling shifts them toward making more positive attributions. Race per se, however, seems to little affect real playmate choices in under-fives, unless other barriers exist to free interaction such as differences of language or interest. Sex, instead, is the primary basis of children's mutual choices of playmates. Similarly, sociometric choices are more positive for same-sex and more negative for opposite peers. (See also reinforcement patterns which sustain this under "Types of Feedback the Child Can Use".) Age discrimination by fives is accompanied by more positive responding to photographs of younger faces. Preschool children generally show positive feelings for persons who respond to them and value them, while negative feelings are held toward those who devalue the child or seem to reject him. When peer faces appear on a sociometric choice apparatus, to which the child responds by pressing a button, three year olds hesitate longer before button pressing for a less preferred peer. Older fours and fives show the very reverse pattern. These findings suggest an associative type of choosing in younger and decisional choosing in older preschoolers.

Children who talk more while carrying out their roles in dramatic play or who have a higher proportion of egocentric speech are more often preferred by peers. Apparently, parents and teachers who talk with the preschool child about more of the topics which he can use in peer play enable him to talk about and play these topics more frequently, thereby increasing his chances for social acceptance. It is also noted, under "Aggression" and "Development of Controls", that such use of language in fantasy activity may reduce aimless aggression and improve the child's personal organization. (See also the preceding section for more on

egocentric speech.) Dependency on adults relates negatively to popularity among younger preschoolers, but receiving reassurance and help from older children does not interfere with popularity and may increase it. Dependency on adults appears to be unrelated to popularity, with youngest and only children having the most favorable peer relations, and with oldest and middle children being more susceptible to peer rejection. Early entrants into kindergarten are lower in social status than are normal age children of comparable IQ who are matched to them on initial personality scores.

Participation in a compensatory preschool program increases DADV children's acceptance and rejection by peers, with the former more pronounced. This may mean that for better or worse, they become more active social participants as a result of their experience. The conceptual distinction between peer acceptance and rejection is supported by evidence that they are unrelated among fours. Giving positive social reinforcement to peers is related strongly to social acceptance, but unrelated to rejection. Giving negative reinforcement is clearly related to peer rejection. Overall, positive reinforcement is given more often than negative, such that children receive more positive than negative reinforcement even from disliked peers (Stevenson and Stevenson, 1960; Morland, 1966; Thompson, 1967; McCandless and Hoyt, 1961; Moore and Updegraff, 1964; Kogan, Stephens, and Shelton, 1961; Piaget, 1967; Horowitz, 1961; Horowitz, 1962; Marshall, 1961; Kohlberg, Yaeger, and Hjertholm, 1968; McCandless, Bilous, and Bennett, 1961; Sells and Roff, 1964; Weiss, 1962; Hodges and Spicker, 1967; Hartup, Glazer, and Charlesworth, 1967). Studies divide evenly between ADV and undesignated SES, only one dealing with DADV. Five studies are of Anglos, one of Negroes, and the balance undesignated. Age is designated in all but three studies.

Behavioral objectives.--Fives show clear preferences for playmates. Children with greatest facility in dramatic play talking become more accepted by peers. Children can improve their facility in dramatic play talk by having adults teach them about topics that are used in dramatic play. Fives' preferential sets can be shaped by reinforcement procedures. Fives of different racial background play comfortably together and thereby increase in mutual regard. (Children who are less accepted may be helped if they are taught not only how to talk more during play, but also taught to use negative reinforcement less and positive more often, when interacting with their peers.)

Emotional communication; Affective awareness

Summary of data.--Because preschoolers are only beginning to attribute motives to others, their impressions of others rely more heavily either upon directly communicated emotion or upon elementary kinds of evaluative reactions. In the latter case, spontaneous feelings between the child and others grow out of the enhanced exchange of values brought about by language. Positive feeling for another at this age presupposes that positive mutual evaluation occurs on the basis of shared values. (See also "Person Preference" in this regard.) The preschool child develops the one-sided evaluation of respect for his superiors, although some fives are beginning to question this relationship. This latter development grows perhaps from the child's increasing capacity to initially assume, for others, their spatial, later their role, and ultimately their psychological perspective. The under-five child can assume only sporadically the spatial perspective of another, e.g., orient a picture for someone else

as it has previously appeared to him. Fives improve only slightly, but sixes markedly in the foregoing.

Impressions that arise from direct emotional communication are available to fives, particularly through the facial and to a lesser extent the vocal non-verbal modes, as well as through the direct semantics of verbal communication. As already noted under "Social Abstraction", the verbalized communication of positive or negative regard is made possible for fives through their grasp of the conception of social desirability. Fives recognize the primary emotions through facial expression with considerable accuracy. Even as early as three years, children comprehend some emotions expressed in this mode. Trainable mentally retarded children of comparable mental age appear to recognize emotions as well as do those of normal intelligence. Grief, contempt, and to a lesser extent fear may lie outside the comprehension of under-fives and fives, although they often recognize that an unpleasant emotion is being communicated. Under-fives seldom can use the context of a picture story to improve their estimate of the meaning of some visual display of emotion beyond that which they comprehend from an isolated display, but some fives modify their original estimates from isolated displays when these are re-embedded in such a context. Under-fives' and fives' capacity to recognize an emotion as pleasant or unpleasant, even though they may not accurately label it, attests to the role of mediation in the construction of a more generalized connotative, semantic system at this age. Fives can, thus, use some bipolar terms, e.g., pleasant-unpleasant, accurately to label emotions.

In the isolated vocal mode, fives, compared to older children, disproportionately recognize loving and fail to recognize sadness. The excessive recognition of loving may relate to the tendency of young children

to over-attribute kindness or benevolence. Boys are more accurate than girls, especially for vocal communications of the negative emotions. For both sexes, sadness is better recognized with male voices, and happiness and loving with female voices. Both sexes recognize anger better with the same-sex adult. ADV and DADV children probably are not grossly different in such recognition of vocal and facial components, although labelling may be less developed in DADV. Autistic children have been regarded in some formulations as incapable of grasping emotional communications. They do, contrary to this common opinion, vary their responses toward compliance for persuasive commands and toward non-compliance for harsh commands. When adults value a particular context less, these children's compliance is greater; when it is overvalued, noncompliance becomes characteristic. When compliance does occur in the latter instance, five-year-old autistic children accompany it with a display of negative expressive behavior. They evidence in these ways that they do respond to and with emotional communication.

Some important correlates of individual differences in emotional communication have been examined. Fours through sixes who verbalize their feelings are perceived by their teachers as more expressive, mature, empathic and imaginative. The tendency to verbalize feelings is more pronounced with increasing age. Individual differences in selective attention to the facial displays of emotion reveal that fives who attend more to emotion are more responsive to social reinforcers (Baldwin and Baldwin, 1970; Piaget, 1967; Flavell, 1968; Dil, 1969; Gotts, 1971b; Izard, 1968; Ekman and Friesen, no date; Dimitrovsky, 1964; Sussman and Sklar, 1969; Gilbert, 1969; Gotts and Teach, 1969). One study is of DADV, with the rest about equally divided between ADV and undesignated SES. Three studies are

of Anglos and the remainder undesignated. Age is designated and/or compared in a majority of the studies.

Behavioral objectives.--Fives can recognize facial expressions of primary emotions with considerable accuracy, but with the notable exceptions mentioned above. Fives recognize emotions as pleasant or unpleasant even if they do not recognize the particular emotion. They use affective language to describe feelings. Their labelling of emotions and mediated categorizing of emotions can be improved. Such changes of verbalization may be especially beneficial to DADV fives.

Motivation

Types of feedback the child can use

Summary of data.--Because the emphasis of most studies, which contribute to this section, is upon behavior change through some procedure, rather than what the child can do or is like and because procedures vary widely, the emphasis here is placed on assured general conclusions about what effectively motivates fives. A particular procedure is emphasized only when it is the central focus of some conclusion. For this reason, in relation to the extensive empirical base which supports these conclusions, the write-up here is extremely condensed. Attention is also given in this section to those sources of individual differences which may affect the effectiveness of particular motivational procedures. Data assembled for the first of these purposes come from several categories of report number one: "Threat," "Failure/Success," "Reward Schedules," "Types of Reward," "Peer Effects," and "Teacher Effects," with the individual differences

information coming from "Higher Needs" and "Locus of Control". "Stimulus Variation" plus curiosity motivation and "Preference", which relate also to individual differences, have been studied most extensively and so they are given separate treatment.

(Threat): Threat intensity differently affects children of differing SES levels, probably because of differing parental practices by SES level in the use of threat and punishment. The outcome is that ADV children respond better to milder threat and DADV children to harsher threat. Either advanced warning of a penalty or the appearance of an aversive stimulus or punishment, prior to rather than following the occurrence of a particular unwanted behavior, is more effective in regulating the child's behavior by inhibition. Warnings may be more a propos in discrimination learning than in other tasks (Oftfeld and Katz, 1969; Turner and Wright, 1965; Harvey, 1968; Karsh and Williams, 1964; Stevenson, Weir, and Zigler, 1959; Hall, 1967; Spence and Dunton, 1967). These studies are about equally distributed over the three SES categories, include Negro, Anglo, and undesignated ethnicity, and deal mostly with fives.

(Failure/Success): Experiential failure and success, as prototypes of feedback, are often followed by direct avoidance and approach, respectively, by young children. When such feedback is provided verbally, before the child has received a large amount of experiential feedback, fives stay with the task and improve their performance. Feedback alone, however, is often not as helpful for fives as is social reinforcement. See more on this point under "Types of Reward". Fives seem not to show much context influence, however, from immediately prior success/failure feedback on one task to a different task which follows. Some evidence suggests that failure feedback given verbally is both emotionalizing

and confusing to under-fives, and may operate this way for less mature and for DADV fives. These reactions to failure feedback may mean that it is not yet distinguishable from threat or punishment by younger preschoolers. The absence of reward apparently violates expectancies, leading to frustrative non-reward effects which inhibit a previously rewarded response or hasten its extinction (McDowell, Nunn, and McCutcheon, 1969; Pikulski, 1970; Bee and Walker, 1968; Bryant and Anisfeld, 1969; Bauman, 1969; Braine and Shanks, 1965; Zunich, 1964; Longstreth, 1966; Stern, 1966). Studies are miscellaneously scattered over ADV, DADV and undesignated. Children are Anglo or undesignated. Age is always given, with most studies being of fives.

(Types of rewards): Social reinforcement from an adult female produces larger increments in a repetitive motor task than that from an adult male, perhaps because the attention of the adult male produces an initially higher base rate of performance. For isolate children, teacher attention alone operates as a powerful social reinforcer. Social reinforcement is more effective than candy or other material reward or feedback with ADV fives and maybe as effective with DADV as material reward, except when a task is of high difficulty. Attention need not be delivered by a real person, but can be mediated through the attention of a puppet which is operantly controlled by the child. Further, the picture of a peer can operate as a reinforcer. A more general kind of token social reinforcement can be accomplished by dispensing happy or sad cartoon faces, contingent upon the child's behavior. The issue of whether social reinforcement has the same meaning for fives that it does for older children is clouded by the fact that approval alone, which provides no feedback, is sufficient to maintain a particular response in fives, but will not work this way

with older children. Thus, it may simply be that approval, attention or the communication of positive regard operate upon fives during the procedures commonly referred to as social reinforcement.

The need for reward depends in part upon task difficulty. With more difficult tasks, social reinforcers alone may be ineffective, perhaps for the reasons detailed under "Success/Failure". Incidental learning may proceed better under neutral comment, not quite as well under praise and poorly under tangible reward. The very reverse order is true for intentional learning. These findings appear to demonstrate a fairly direct relationship between incidental learning and those adult-child interpersonal conditions which favor general, informal learnings. This is true when task difficulty is not so much the issue as is the child's willingness to stay with the task until he either smooths existing motor behaviors into a more securely chained sequence or visualizes through the adult's behaviors new ways of behaving. (In this last connection, see also "Imitation".) Under "Dependency", findings were cited which also support this distinction. On the other hand, intentional learning must occur whenever the task is either too difficult for the child's existing range of behaviors or when the adult responses to be followed are molarly too covert for the child to acquire through imitation, e.g., as in the covertness of those adult responses which support word or letter recognition.

The key issues in intentional learning are first, structuring the task so as to optimize attention to relevant components and second, maintaining that attention. Tangible reinforcers perform this second function and may either contribute to or interfere with the first function. The latter happens either when the tangible reinforcer emotionalizes the child or when it basically distracts his attention from the difficult cue

structure of the task. Probably the potential of tangible reinforcers to distract or emotionalize is responsible for many unexplained failures of training procedures. The possibility of tokenizing a tangible reinforcer system should be considered, since tokens are probably both less distracting and emotionalizing than are tangible reinforcers. Most fives can learn to use tokens.

Many assumptions about what constitutes an effective tangible reinforcer will be challenged by the findings next to be reported. While candy is extremely effective with DADV Anglos, it has small appeal for DADV Negroes compared to at least six other possible tangible reinforcers. Candy has been found less effective than social reinforcement in discrimination learning, unless the task is carefully structured so that the penalty for an error is the loss of more candy than is earned for a correct response. Perhaps in each child population it is advisable to scale relative preferences for particular tangible incentives before deciding which ones to adopt. Better yet, one would determine the individual child's optimum reinforcers. The conclusion is favored that the reinforcing power of particular objects is proportional to their positions in such a preferential hierarchy--but perhaps bounded always by an upper limit, for some given task structure, beyond which more powerful incentives will paradoxically produce performance decrements by emotional or other attentional diversion. To illustrate what this hierarchy might look like for a particular population, ADV Anglo fives' preferences are arranged here from most to least desirable tangible objects: bubble gum, balloon, rat fink, chiclet, marble, candy corn, M & M candy, penny, toy cow, washer, paper clip, bean. Using natural contingencies such as granting or withholding desired activities has been successful with DADV children. A risk

is that imperfect application of reinforcement principles by poorly trained personnel can lead to largely restrictive, non-supportive classroom atmospheres, resulting in children's decreased task involvement, decreased attending to teachers, and increased disruptive behaviors (Allen and Others, 1964; Stevenson, Hickman, and Knights, 1963; Schutte and Hopkins, 1970; Sigel, Ireland, and Watson, 1967; Pikulski, 1970; Unikel, 1968; Baer, 1962; Horowitz, 1962; Gotts and Teach, 1969; Allen, 1966; Teager and Stern, 1969; D. Ross, 1967b; H. H. Marshall, 1969; Caron, 1966; Stern, 1966; Croll, 1970; Spence and Dunton, 1967; Hall, 1967; Leibowitz, 1966; Hoff, Feldstein, and Witryol, no date; Allen, 1970; Katz, 1969). Forty percent of the studies each deal with ADV and undesignated SES and with DADV 20 percent. About one-half deal with fives, one-third with under-fives, with the remainder of mixed age. About one-third study Anglos, with the rest undesignated except for two studies of Negroes.

(Peer effects; Teacher effects): Interrelations will be apparent between the following material, and that appearing in the preceding section on social reinforcement and that in "Person Peference". ADV Anglos give more positive reinforcement to peers during play than do either ADV or DADV Negroes. This is true for the sexes analyzed separately. Fours reinforce more than do threes; boys reinforce boys more and girls reinforce girls more with, in order of frequency for fours: positive attention, submission, affection and personal acceptance, and tokens. About one-half of all reinforcement follows some solicitation, with the balance occurring spontaneously. Giving and receiving are reciprocal events, mostly occurring during dramatic play, with almost none appearing during table activities. The importance of peer reinforcement resides in part in its power to increase the frequency of particular classes of child behaviors, such

as assertive behaviors. The responsiveness of children to sources of social reinforcement is a function of prior individual histories. Those who have been rewarded little by peers imitate a non-rewarding peer model more. This appears to relate to the differing effects of harsh and mild threat upon ADV and DADV children. Peer contextual effects upon level of aspiration are evident: fives most readily undertake difficult skill tasks in pairs and least willingly before a group. Despite peer influence in shaping behavior, fives do not conform to the erroneous perceptual judgments of a group of peer stooges in the way that older children do. Once a particular child behavior has been elevated by the systematic giving or withholding of adult attention contingent upon its occurrence, the behavior is maintained after the contingency is allowed to revert to a sporadic occurrence. Adult actions are more discriminable than are peer actions from a child's own actions, so they are more commanding of attention and are more easily reinforced in a vicarious reinforcement arrangement (Feshbach and Devor, 1969; Charlesworth and Hartup, 1967; Buell and Others, 1968; Patterson, Littman, and Bricker, 1967; Hartup and Coates, 1967; Torrance, 1969; Hunt and Synnerdale, 1959; Schutte and Hopkins, 1970; Riley and Epps, 1967; Baldwin and Levin, 1964). ADV under-fives and undesignated SES fives, all of undesignated ethnicity are prominently represented in these studies.

(Reward schedules): The principal variations to be considered here are amount, intermittent reinforcement and delay of reward. High and low persistent children persist longer under medium amount of reward. ADV do not persist as long as DADV. Rate of increase of responding is greater under low than high reward. Increased amount of reward during a task decreases response speed and decreased reward increases response speed.

High reward produces higher asymptotic response probability whether it precedes or follows low reward. But after high reward children may be reluctant to perform for subsequent low reward. Children, receiving low reward or who are allowed to compare their reward to another child's, engage in greater self-reward.

Under-fives, who are reinforced more frequently during pretraining, attain a higher level of discrimination performance in a subsequent task. More frequent reinforcement produces a less rapid and less enduring motor response. Intermittent reinforcement is apparently used more successfully at this age to increase the frequency of simple motor behaviors than it is to increase the frequency of verbal behaviors. Once desired verbal behaviors have been increased by continuous reinforcement, however, they appear to be maintained by natural contingencies.

Being able to see a reward during the performance upon which it is contingent improves performance. Without this visibility, fives are initially frustrated by reward delay. Delayed reward operates most strongly nearer to the goal (in time, distance or attainment), with performance slowing down following reward. Anticipatory schedules of action can gradually be shaped to exacting requirements in preschoolers. Overall, however, delayed tangible reward is less effective than immediate reward for ADV and DADV, and delayed verbal reinforcement may be particularly detrimental to DADV performance. The tendency to choose a smaller immediate reward over a larger delayed one is associated with lower intelligence among fives. ADV more frequently than DADV choose the larger delayed reward. This capacity is on the increase among fives and older. Children, who pick a smaller immediate reward, do so with shorter decision latencies (Nakamura and Lowenkron, 1964; Stern, 1966;

Nakamura and Ellis, 1964; Bruning, 1965; Masters, 1969; Siegel and Andrews, 1962; Weir, 1964; Steigman and Stevenson, 1960; Ryan and Cantor, 1962; Myers and Myers, 1963; Fort, 1961; Penny, 1960; Myers and Myers, 1966; Perline and Levinsky, 1968; Hart and Risley, 1968; Kendler and Others 1958; Rieber, 1964; Sheikh, 1968; Baer, 1960; H. H. Marshall, 1969; Zimiles, 1967; Mischel and Metzner, 1962; Lang and Adair, 1968). Over one-half of these studies are of ADV children of undesignated ethnicity. Three are of Anglo and two of Negro. Under-fives, fives, and mixed ages are about equally often represented.

(Higher needs; Locus of control): As will be recognized, some related content has been examined under Social Behaviors and more will be under Intra-psychic. The particular emphasis in the present section is upon need characteristics, which may influence the effectiveness of other motivational procedures. Curiosity studies were removed from the original "Higher Needs" category for inclusion later in "Stimulus Variation".

Younger preschoolers manifest higher love and affection needs. Fives are still susceptible to affiliation arousal simply by exposure to an appropriate fantasy theme. When these individual conditions prevail, social reinforcement will clearly be more effective than will tangible reinforcement, as is also the case for dependency arousal. Dependency needs are somewhat stable by five years, even in the face of generally increasing independence needs. For girls, independence needs tend to be inversely related to all other motives, while for boys, independence is either unrelated or positively related to other measured needs. Dominance increases in boys just before or around five years of age at the same time that recognition-status needs decline. For mothers and daughters, a generalized expectancy for recognition-status, love and affection, and

dominance motives are found; whereas for fathers and sons, these expectancies are more independent. If anything, younger children show negative relations between their recognition status or need pattern and their fathers', but their expectancies are generally positively related to those of parents.

The level of aspiration of DADV mothers for their children is generally lower than that of ADV mothers for their children, with reference to some specific task. The kind and extent of maternal control exercised over the child are more important in determining children's cooperative problem solving than are strictly cognitive variables. When DADV children are taught informally outside the classroom by ADV mothers for a summer only, the DADV children increase in achievement motivation. High need achievement status in boys is associated with their parents setting high standards for them, providing independence training and reinforcing high performance, while both authoritarian and indulgent child-rearing practices diminish need achievement. ADV children consistently have higher need achievement than DADV. This motive is emerging into some clarity toward the close of the preschool period. Some suspicion exists that normal motive development is attenuated by such unfavorable factors as poor nutritional level.

Internal locus of control is the characteristic of feeling responsibility for one's own success or failure. It relates closely to good conduct and children's ability to conserve. Locus of control is more external among DADV and internal among ADV children. Fives who are more internal in locus of control, with reference to achievement behavior, do receive more teacher approval for achievement. Children, with an external locus, show less achievement striving. The use of extrinsic

reinforcement is more clearly indicated in children who possess a more external locus (Tyler and Whisenhunt, 1962; Gordon and Cohn, 1963; Tyler, Rafferty, and Tyler, 1962; Brophy and Others, 1965; Pierce-Jones, 1968b; Berkowitz, 1964; Werner and Muralidharan, 1970; Hess and Others, 1969; Reimanis, 1970). About one-half of the studies are of ADV with the rest divided between DADV and undesignated SES. Nearly all are undesignated as to ethnicity, with Negroes in two studies. Age factors are only grossly delimited. In view of the number of different motives subsumed in the section, sampling is altogether inadequate.

Behavioral objectives.--Fives learn incidentally better under social reinforcement or adult attention. Fives learn intentionally better under tangible reinforcement. When tangible reinforcement is indicated, each five responds best to those reinforcers which are appealing to him individually, but not so much valued as to emotionalize him or distract his attention from the task. Fives intentionally learn best when the task is structured so as to optimize attention to relevant components. Intentional learning may be more indicated for fives when the behaviors they are to acquire are too covert behaviors of a model to be discriminated. Fives can learn to use token reinforcers that are referenced either to social or tangible reinforcement. They may be distracted less by tokens than by tangible reinforcers. Fives learn when natural contingencies are used. Fives increasingly reinforce each other through positive attention. Fives perform better for higher reward. Fives acquire more vigorous and enduring motor behaviors under intermittent reinforcement. Fives tolerate reinforcement delay better when it is increased very gradually. Fives may require immediate, continuous reinforcement to produce or increase a low probability response. Fives are easily confused by failure

feedback, possibly mistaking it for punishment. (If threat or punishment is used, fives respond to its harshness or intensity on the basis of their prior histories. Imposing one's own values in this area is not only ethically questionable but is predictably ineffectual. Adults should give augumented feedback early, before the child experiences failure. Sources of individual differences in responsiveness to reinforcement should be carefully weighed before acting. The inconsistent or erroneous application of reinforcement principles can actually cause serious deterioration of learning and classroom climate. Only clearly qualified personnel, who are aware of these risks, should undertake the management of reinforcement. It is not a game to play, but a powerful resource if used wisely.)

Preference

Summary of data.--In the preceding section, tangible objects were considered as extrinsic reinforcers for other behaviors. Here the intrinsic interest of interacting with the object is the focus. Activities, environmental attributes (other than complexity), theme or content of stories, foods, and other bases of preferential behavior receive attention as well. Interests and values link to intuitive thought in general, so are undergoing development during the preschool years. Initially, interest is the prolongation of needs, but intuitive thinking multiplies and differentiates interests, giving rise to a progressive dissociation between the energizing mechanisms, which imply interest, and the values, which are born through interest. The extent to which particular realities fulfill the young child's needs depends upon the incorporations which are required to maintain equilibrium. Speaking favorably to the child of a

previously neutral (non-desired) object increases its ranking within the child's hierarchy of preferences. Perhaps for the same general reason, children's preferences for food resemble those of their parents, except that they have fewer likes than parents. They develop attitudes toward particular role positions such as grocer, physician, grandparent, and friend.

By the preschool period, children's preferences for particular kinds of toys are easily determined by observation. Boys, for example, prefer block play less than do girls at age five. Preference for particular toys is little affected by the presence of an unfamiliar versus a familiar peer. Having someone read a story to [illegible] nearly all preschoolers. Fives' choices of thematic pictures, presented to them in a choice situation, show that they are interested in a variety of themes involving people and that pictures of fantasy themes or animals rank low. Science is also of considerable interest. Sex differences are evident: boys are persistently interested in physical world phenomena; girls are not as preoccupied with issues of the social world as is sometimes assumed.

Learning related activities become a focus of preferential behavior. Preschool enrichment experiences for DADV Negroes and Anglos result in their and their parents' increased interest in school-oriented activities. Montessori experience increases positive attitude toward learning for non-DADV. Kindergarteners, receiving reading instruction, develop better attitudes toward reading and school, with girls of lower IQ profiting most. Early introduction to reading appears, however, to be detrimental to skill and attitude in less mature boys. A modified linguistic approach to beginning reading also favorably affects attitude. Many fives compound

favorably to programmed instruction introduced in kindergarten, preferring it over other activities. Selective attention to school tasks by young retarded children is improved through certain experimental curricula.

The function of selective attention, as a form of preference, is to so center or focus upon particular objects or attributes as to render these virtually as figure while their potential competitors are relegated to insignificant ground. This type of preferential behavior is in evidence throughout the preschool period. Generally, around three years of age AAV and DAAV children preferentially use color over form and size as a basis of matching nonsense figures for similarity. Gradually, there is a shift from color to form by age five among AAV as the basis of choice. DAAV children usually show this shift later. Such attention to form is known to facilitate form discrimination and early reading skill acquisition. Selective attention is susceptible to cueing, prompting, and conditioning procedures, so its natural base rate can be obtained only when these are absent. Fives manifest certain subtle types of cognitive conflict when both (1) their preferred stimulus attribute is absent and (2) the available stimuli can be perceptually distorted to produce an overcentrated, assimilated instance of the preferred attribute. Ability level is not critical to color and form selective attention; the relationship appears to operate in the opposite direction, in fact, with the selective attention facilitating the operation of perceptual skills. Color is preferred over black and white in photographs. With fives, when color/form matching is of more complex stimuli, in which color characteristics vary in hue, brightness, saturation or combinations of these, brightness produces a greater number of matches than either hue or saturation differences. Fives most prefer, in descending order,

blue, red, green, and yellow. Threes through fives prefer pictures with light units or with dark shades to bright, saturated colors and prefer illustrations with more colors over those with fewer colors. In keeping with the earlier comment on story preferences, they prefer modified, realistic drawings to fanciful drawings, prefer true-to-life over fanciful drawing, photographs to black and white drawings, and prefer, by a wide margin, those drawings which are developmentally superior to their own. These data together show how far perception is advanced over reproduction skills and that the child's use of fantasy does not mean that he prefers fantasy. For preschoolers, fantasy is a technique and a mode of cognition rather than a preferred state of retreat. (See also "Fantasy".) Fours still prefer objects over pictures, reflecting the lag of representational, two-dimensional perception over three-dimensional, natural perception. Many fives prefer high frequency nouns and adjectives over low frequency words (Piaget, 1967; Witryol and Alonso, 1962; Mathany and Others, 1962; Berger, 1960; Nimnicht, Snyder, and Alward, 1970; Schwarz, 1968; Margolin and Leton, 1961; Ford and Kaplyar, 1968; Macoun, 1967; Haupt, 1966; Feldman, 1964; Fleege, Black, and Rockcastle, 1967; Chen and Others, 1965; Kelley and Chen, 1967; Kelley, 1966; Gruber, 1964; McNeil, 1964; Cramer and Talbot, 1966; Gotts and Tesch, 1969; Thompson, 1970; Gotts, 1968b; Spellman, 1967; Gotts, 1971a; Irwin, 1967; D. R. Miller, 1969; Pearson and Gotts, 1970; Trabasso, Steve, and Eichberg, 1969; Corah, 1966; Corah, 1964; Corah and Gross, 1967; Cramer, 1967; Harris, Schaller, and Miller, 1970; Kagan and Lemkin, 1961; Irwin, 1967; Rosvet, 1965; Amsden, 1960; Lewis, 1963; Bereiter and Dummers, 1967). Of these 38 studies, one-half are of undesignated SES, with ADC and DADC about equally represented in the balance. Age differences are adequately covered. Anglos receive specific mention in nine studies and Negroes in two.

Behavioral objectives.--Fives can display individual preferences for foods, colors, toys, story themes, and role positions to be played. Their motivation for what the adult wants them to do relates directly to the presence, absence or competition of their preferences, i.e., relates to preferential compatibility with the behaviors expected of them. Fives increase interest in neutral objects or activities which are favorably mentioned by others. Most fives like to listen to stories, especially about people; their interest will be higher still if the story is accompanied by realistic, colored illustrations. Boys are interested in phenomena of the physical world. Fives can selectively attend to form, if appropriate focusing techniques, reinforcement, and emphasis are used by adults. Fives can develop positive attitudes toward learning and school-oriented activities. (A major goal of any preschool program should be the development of positive interest in learning and school-oriented activities. Adults increase the child's chances of new learning by building around his individual preferential behaviors. Selective attention to form facilitates reading readiness so should be cultivated. The child who shows no clear preferences, in several of these preferential areas, is manifesting atypical affective development. For such a child, a home study is warranted, followed by an individualized program of directing his attention to the respects in which things vary. Conditioning procedures may be required. Further development in this area is essential if the child is to build a process basis for making later choices.)

Stimulus variation

Summary of data.--When appropriate observational techniques are used, teacher rankings of curiosity correspond to objective measures consistently.

Among preschoolers, curiosity manifests itself in at least three different ways: it is primarily verbal in some children who talk and ask questions; in others it involves visual scanning and observing; and in others it appears as manipulation of materials or exploring of sensations. These may overlap. In each case, curiosity shows the child's stance toward environmental stimuli in terms of approach-avoidance. High curiosity children are more effective at classifying and categorizing, show adults in doll play as effective dilemma solvers, have greater differentiation and integration of self-image in figure drawings and differentiation of affective expression, and are able to perform more effectively in free play and to avoid detrimental behaviors. Father-absence may be related to aimless behavior and low curiosity. Effective, maternal control strategies relate positively to high curiosity.

Stimulus variation is associated with curiosity motivation. Figural complexity is more preferred by ADV than DADV children. For all ages, preference for complexity is an increasing linear function of stimulus complexity up to some limit, beyond which preference drops. Free choice is for this reason probably mediated by complexity. Continuous exposure to some given level of complexity increases free choice selection of more complex stimuli. Preference for complexity may explain why DADV Negro fives are less often interested in interacting with only one or two objects than are Anglo children. This may, however, be due to differences in the capacity to use fantasy.

Novelty of stimuli is the attribute most often studied under stimulus variation. DADV prefer novel stimuli less than ADV. Low anxiety children prefer greater novelty. In boys, fear of novelty is continuously predictive of heightened fearfulness from infancy into early childhood.

This is not so for girls. Such fearfulness is also associated with lower levels of intellectual functioning. Following a familiarization period, children show a decided preference for materials not involved in the familiarization, even when those materials are, from the adult's perspective, less attractive or satisfactory alternatives. This preference for novel stimuli increases with increases in familiarization with the materials already available. Preferences for novelty are cumulative, growing over shorter and longer periods of time rather than being characteristic of only a point in time. Expectancies for familiar events or objects may, however, in the face of larger amounts of change, produce facial and/or verbal expressions of surprise, perplexity or comments about the unexpected outcome. Such novelty-related, object behaviors are so pervasive as to require few qualifications as to their generality. A related phenomenon is spontaneous response alternation, following some routinized performance. Here the child performs a novel motor response preferentially. Children taught a motor skill which they are required to practice in repeatedly novel ways, however, make fewer than chance alternations. A detailed analysis of novelty related behaviors reveals that fixation and orientation time undergo a steep decrement over as few as six trials for some visual displays. This suggests that fixation time is a part of the orientation response. Other kinds of evidence indicate that the stimulus familiarization effect reflects habituation. So powerful is this effect that familiar stimuli that have been associated with a previously rewarded behavior hasten the behavior's extinction if they are present when it is no longer being rewarded (Medinnus and Love, 1965; Mimuchin, 1969; Hess and Others, 1969; Hicks and Docksteder, 1968; Munsinger and Weir, 1967; Strain, 1968; May, 1963; Kohlewes, 1966; Mendel, 1965; Bronson, 1970; Bayley, 1968;

Charlesworth, 1964; Shantz and Watson, 1967; Endsley, 1967; Leckart, Briggs, and Kirk, 1968; Schwarz, 1968; Cantor and Kulose, 1969; Harris, 1967; Jeanrenaud and Linford, 1969; Ellis and Arnult, 1965; Lewis, Goldberg, and Rausch, 1967; Witte, 1967; Viney and Others, 1968). About 40 percent each of these studies are drawn from ADV and undesignated SES, the remainder being DADV. Only five studies mention Anglos and three mention Negroes. Age is undesignated in about 40 percent of the studies, with 40 percent under-fives, and 20 percent fives.

Behavioral objectives.--The curiosity of fives is manifested in different approach styles, (i.e., verbal, visual, tactile), and under different stimulus conditions. Fives are motivated both by greater complexity and novelty, within the limits suggested in the summary above. Fives can increase in their capacity to cope with both complexity and novelty. (It may be noted from the motor novelty data above that one way to eliminate an undesirable behavior is to require its repeated practice until its novelty is seriously curtailed.)

Intra-psychic factors

Temperament

Summary of data.--A number of the original intra-psychic categories are conveniently grouped here because they are interrelated from infancy.

(Persistence, orderliness): Children with both passive and active behavior disorders are more persistent or perseverative than are normals. Persistence and orderliness do not together comprise a unitary trait

among fives. Task persistence is enhanced by certain types of preschool experiences, for example, by a Montessori program (Thomas, Chess, and Birch, 1968; Hetherington and Brackbill, 1963; Berger, 1970). These are studies of under-five ADV and undesignated SES and of ADV Anglo fives.

(Activity level): Passive children start initially low in overt intensity but increase by the preschool period. For this reason, perhaps, the active-passive dimension shows decreased applicability for describing four and one-halfs and older as compared to younger children. The original temperamental tendency is complicated further by peer reinforcements, which tend to elevate the activity level of under fives, especially for those who respond strongly to peer reinforcement. Boys more than girls show higher activity levels and Anglos more than Negroes. Some differences in activity level of children at home and at school appear to be a function of mother-child interaction patterns among DADV Negro and Puerto Rican pairs. Higher activity level at three years is associated with higher mental ability throughout the school period and later life, although the relationship is negative around five years, perhaps again because of complicating factors of peer reinforcement and of situational differences in activity that have been learned in mother-child dyadic interaction. This may also result from the emergence of general inhibitory processes in the later preschool years (Thomas, Chess, and Birch, 1968; Emmerich, 1964; Patterson, Littman, and Bricker, 1967; Kohlewes, 1967; Weissman, 1967; Bayley, 1968). ADV under-fives, undesignated SES Anglo under-fives, and DADV fives (Anglo, Negro, and undesignated ethnicity) comprise the samples. ADV and DADV are together the bulk of the studies.

(Emotionality): The interrelatedness of overt positive mood, mild reactivity, approach, and adaptiveness has been established by factor analysis for the preschool level. Removal of unfavorable symptoms has positive consequences. Normal ADV threes through fives are more emotionally disinhibited by mother's presence than by a stranger's when they are in a distressful situation. Intensity of distress to maternal separation is stronger in under-fives as mother-child relationship is stronger or where mother displays distress. Tension symptoms are totally absent in only 35 percent of DADV fours. Boys more than girls show up in the tension statistics and are more vulnerable to family crises. Anxiety arousal in under-fives leads to greater physical contact seeking and less attention seeking. Anxiety appears more to stimulate than to inhibit doll play or other fantasy play for boys, but this is not as clear for girls. Palmar sweating reliably indicates emotional arousal among fours and fives. The sex difference mentioned above regarding reaction to anxiety arousal may be due to the greater developmental maturity of girls, because increasing control of emotional expression via self-imposed equanimity and compliance is also characteristic of threes through fives. The sensory sources of emotional arousal seem to vary from visual to auditory channels alternatingly between three and six years; emotionality itself seems to wax, then wane. The preschool boy of positive mood is more likely to have above average intelligence throughout life. The support of adults or peers during stress or the opportunity to symbolize the distress through some fantasy medium seems to help the child cope with emotional distress, although these means do not necessarily diminish the overt expression of immediate distress, and may often lead to its apparent increase. What they seem

to do is to reduce defensive reactions to distress. In a developmental sequence, distress may first appear as direct, somewhat global, overt expression of distress in crying screaming, shaking, facial contortions, and gross motor flailing; rhythmical activity may follow as a successive mode of expression of tension discharge; this may be followed by various forms of behavioral symbolization in play; and finally as psychological symbolization. This last manifestation is not yet typical at preschool age, and for this reason it appears inappropriate to suggest that the preschool child experiences and expresses complex subjective states (e.g., anxiety in its adult sense), distorted self-images, and psychodynamic patterns of defense (Thomas, Chess, and Birch, 1968; Schwarz, 1968; Stine, Saratsiotis, and Furno, 1969; Bayley, 1968; Ilg and Ames, 1955; Rosenthal, 1967; Moore and Ucko, 1961; Speers and Lansing, 1969; Lockwood, 1970; Bowlby, 1969; McDermott, 1967; Vredevoe and Others, 1969; Braine and Maclay, 1968; Kassowitz, 1958; Lore, 1966; Wurtz, 1960; Hall, 1966; Porterfield, 1969). Nearly all are studies of undesignated SES, with some minimal attention to ADV and DADV. Negroes and Anglos are examined in only one study each. Age is most often under-five or mixed.

(Reactivity to stimulation): The developmental courses of stimulus threshold and intensity of reaction cross over for non-disturbed versus disturbed preschoolers, with non-disturbed showing a rising threshold and dropping intensity from infancy into the preschool period and disturbed showing the opposite courses. This is true despite the fact that passive disturbed children start in infancy with both the highest threshold and lowest intensity. Calmness in boys at three years relates positively to verbal IQ at five and throughout later life. For girls the relationship of calmness and IQ is essentially unpredictable over time after five years.

Fear of novelty in infancy predicts the same behavior into early childhood for boys but not for girls, and reactivity to visual novelty in infancy is consistently related to shyness before and after age five. High reactivity can result from asphyxiation during delivery as well as from early stimulation and familial predisposition (Thomas, Chess, and Birch, 1968; Bayley, 1968; Ucko, 1965). Nearly all are studies of undesignated SES, with ADV mentioned once. Under-fives are most often examined. Ethnicity is examined only one time.

(Adaptability to demands; Behavior pathology): The temperamental characteristics of adaptability, persistence, reactivity to stimulation, emotionality, and activity level are not the source of active and passive behavior disorders; the negative consequences of these behavioral characteristics seem to arise from how the child's behavior is dealt with and viewed by his parents and teachers. The areas which adults single out for overemphasis seem to be a function o their social class value orientation. Within some range of child temperamental characteristics, adult patterns of relating to the child and of making demands upon him during early socialization affect considerably his responsiveness to demands for particular kinds of performances. Children from larger families tend to manifest antisocial or acting out behavior problems; from smaller families they tend toward anxiety and neurotic symptoms. Behavior pathology occurs independently of SES among children whose parents suffered parental (emotional) deprivation during their own childhood.

MSES children seem better prepared by their early socialisation to adapt to cognitive demands by viewing the task situation as one in which performance will be appropriate and/or rewarded; LSES children may more

often view the situation as an occasion to relate socially to the adult or to peers. Firm demanding behavior by parents is unrelated to punitiveness or lack of warmth and leads to independent assertive behavior in under-five girls. Seemingly adult nurturance enhances the child's attention to the interpersonal environment, while increasing sensitivity to distractions. Non-nurturant permissive treatment produces the greatest task persistence under demand. The Montessori preschool regimen likewise produces more attending, compliance with task procedures, and settling down to work. Some Head Start programs have been successful in increasing LSES children's task-oriented interactions with adults and their work orientation. Thus for some children modification of the focus of adaptation appears possible late into the preschool period, although this does not indicate that adptability per se is as modifiable. The need for modification of focus is highlighted by descriptions which characterise children of disorganised LSES families as manifesting pervasive passivity as a main coping response, acting upon cues or in direct imitation of others rather than from their own volition, having auditory and particularly visual over-reactivity with extensive focusing upon the action of adults, showing marked unresponsiveness to large segments of the external world, expecting calamity or showing fearfulness in all aspects of coping, and experiencing transitions as the most difficult of school routines. Sex differences are evident in the more rapid orientation of girls to cognitive demands and of boys to the challenge of cognitive difficulty. A continuing problem in the assessment of adaptability to new, difficult tasks is the interrelationship of skill and willingness. Children who have better skills for a given

task will thus appear more adaptable (Thomas, Chess, and Birch, 1968; Bettelg and Others, 1968; Dunham and Bagan, 1967; Wolff, 1966; Rosenthal and Black, 1967; Berger, 1969; Michigan Head Start Evaluation and Research Program, 1968; Mandel, 1968; Feuerstadt and Others, 1967; Moriarty, 1961; Featherweather, 1966). DAUV, AUV, and undesignated DES are studied about equally often. Ethnicity is Anglo or undesignated. AUV are mostly under-fives, DAUV are fives, undesignated DES are of mixed ages or under-fives.

Behavioral objectives.--The child should be allowed to express his persistence, reactivity to stimulation, emotionality, activity level, and adaptability; he can move gradually, within the speed limits of his own temperament, toward coping with a wider range of important environmental events and objects; he may often become more active as he comes in contact with a new peer group in a preschool program; his increased activity may often mean an increase in aggression, taunting, attention seeking; he can use tension releasers which are helpful for him and are increasingly mature, (e.g., he can move toward being able to release tension through play and eventually by symbolic means); if initially focused upon adults, he is likely to become more involved with peers. (Adults should recognize that while the child's basic temperament may not be subject to change at any time, the focus of his actions is subject to change. Working with the child's temperament rather than against it will speed up such changes of focus in his actions. Adults should adapt themselves to both the sources of tension and the highly individual modifications of tension which characterize them. Regulation of stimulation and demands are central issues in the management of temperamentally-controlled reactions.)

Creativity; Creative processes

Summary of data.--Creativity is a kind of instrumental behavior, according to Ward's work, and reinforcement for divergent thinking elevates it in ADV and DADV Negroes and Anglos. Thus, it would seem possible to elevate systematically the creativity of many children. The success of Torrance in increasing divergent thinking of children to high levels supports this possibility. More divergent thinking seems desirable in the early stages of problem solving, whereas more critical thinking is generally regarded as a successive stage in the process, perhaps lying beyond the bounds of preschool objectives. Creativity attains natural expression in play and is enhanced by opportunity for imaginative play. It may be the lack of imaginative play opportunity which causes Montessori preschool children not to exceed non-attenders in some aspects of creativity. Rated playfulness does relate positively to divergent thinking. Planned minimal interventions in children's play can strongly elevate the maturity of play and hence increase its beneficial cognitive effects. Unstructured art assignments are detrimental to creativity. Direct sensory experience of handling objects increases the number of non-standard uses of them suggested by children. Smaller classroom group size increases divergent and analytic questioning by preschoolers (Savoca, 1965; Biller, Singer, and Fullerton, 1969; Starkweather, 1967; Ward, 1969; Torrance, 1969; Franklin, 1969; Lieberman, 1964; Smilansky, 1968; Banta, 1969; Goodnow, 1969; Iscoe and Pierce-Jones, 1964; Torrance and Others, 1967; Torrance and Philips, 1969; Freyermuth, 1969; Lichtenwalner and Maxwell, 1969; Douglas, 1961; Torrance, 1970). Undesignated SES appears slightly more often than ADV or DADV. Negro and

Anglo ethnicity are more often mentioned than in most other areas. Fives are studied most, with many studies failing to designate age.

Behavioral objectives.--Fives play imaginatively with toys and other materials; engage in sociodramatic play, if capable; interact sensorially with varied materials and answer questions about their experience; and produce more divergent perceptions or more fluent reactions to a phenomenon or set of experiential data. Fives can improve in these areas. (No particular absolute level of creativity is known to be optimal, so elevation of the tendency to behave creatively must constitute the primary evidence of progress.)

Self concept; Self awareness

Summary of data.--The demonstrated further differentiation of self concept and the development of the evaluative function in the preschool period seem clear. The relevance of self concept to a number of important school success indicators is further plain. The self concept can become more realistically positive through preschool interventions which aim at this objective. Competency is a critical component in positive self evaluation. The typical pattern of person awareness is for DADV younger preschoolers not to recognize themselves on screen during a television rebroadcast, but to recognize their peers. Self-awareness comes only later. Negro self concept is more negative than is Anglo self concept (Kohlberg, Yaeger, and Hjertholm, 1968; Pierce-Jones, 1968a; Speers and Lansing, 1969; Easson, 1961; Shapiro and Stine, 1965; Piaget, 1967; Pavenstedt and Others, 1967; Wattenberg and Clifford, 1962; Weiner, 1964; Combs and Soper, 1967; Swayze, 1966; Dreyer and Haupt, 1966; Ozehosky,

1967; Henderson and Long, no date; Westinghouse Learning Corporation, 1969; Krider and Petsche, 1967; Klaus and Gray, 1968; Mukerji and Others, 1966; Werner and Evans, 1968; Larson, 1969). DADV and undesignated SES are much more often studied than ADV. Ethnicity and age are frequently mentioned.

Behavioral objectives.--The child can increasingly evidence his concept of himself as competent by spontaneously making realistically positive references to his ability to perform age-appropriate tasks. (Adult-requested self assessments are less satisfactory than are those offered spontaneously either verbally or non-verbally. Providing success experience is fundamental to favorable self concept development.)

Personality, global

Summary of data.--The age-typical image of the preschooler is that he is productive, affectionate, involved in a wide range of activities and enthusiastic about them, shows concern for others, has poor impulse control, and manifests phallic-phase concerns (e.g., jealous, competitive, concerned about the body, anxious). Factor analysis of objective personality tests of preschoolers reveals stylistic first order factors of narrow versus broad preferences, reflective versus impulsive closure, and persistent versus listless closure. Expressive first order factors are interest in dramatic play, fear of punishment, motor impetus, regressive debility, passive fantasy, and anxiety. The manifest behaviors of fours cluster into factors interpretable as inherent leadership ability, aggressive domination, individualistic self sufficiency, and socially irresponsible impulsiveness. Almost the entire range of personality

factors of kindergarten boys, which are derived from overt behavior, can be seen in one school day. Brain impairment is less disruptive of personality than of cognitive development and disorganizes boys more than girls in personality functioning. The behaviors of boys do not conform to body type hypotheses, but they do for girls. Endomorphic, under-five girls are more cooperative, cheerful, low in tenseness and anxiety, and socially extroverted. Mesomorphic girls are energetic. Ectomorphic girls are uncooperative, not cheerful, anxious, and aloof. The personality development of the child does seem to relate to his level of cognitive functioning, although this has been only fragmentarily investigated. Personality characteristics relate also to cognitive styles, but again knowledge of this area is extremely tentative. Attending a preschool program may produce beneficial effects on social adjustment, even though these may not initially be evident. Findings from the California Test of Personality suggest that initial school experience produces loss of self-reliance and increase of anti-social tendencies. It may be particularly urgent that these effects be offset among DADV, inner city boys who show high frequencies of developmental deviation, which interfere with both personality and cognitive functioning (Schachter, Cooper, and Gordet, 1968; Cattell and Peterson, 1959; Damarin and Cattell, 1968; Stott, 1962; Moreno, 1968; Hoffman, 1963; Graham and Others, 1963; Ernhart and Others, 1963; Walker, 1963; Sigel, Jarman, and Hanesian, no date; Bittner, 1968; Bittner, Rockwell, and Matheus, 1969; Hirsch and Borowitz, 1967). Comparative studies of age, ethnic and SES differences are virtually absent. The approach of Cattell, which uses objective tests, and that of Stott and of Moreno, using overt behaviors, appear to be most promising. The wealth of personality information, available on

elementary school age children, is largely missing here because of methodological problems inherent in such measurement with preschoolers. Thus, the more satisfactory contemporary procedures mentioned above may open up this area.

Behavioral objectives.--None. (Adults should be guided, as is suggested under temperament, by a healthy respect for individual differences in the newly discovered areas listed above as factors.)

Adjustment

Summary of data.--Social, personal, emotional, and school adjustment have all received some investigative attention. The child's relationships with other people are more generally predictive of later adjustment than are observations of the individual child in isolation. The efficiency of prediction is troublingly high, suggesting a failure to intervene successfully with many children who show early signs of difficulty. Perhaps as many as 30 percent of ADV preschoolers show clinically established adjustment problems. These begin as behavior problems of mild to moderate severity. (See also "Temperament".) Boys are overrepresented in mental health referrals at this age by proportions as high as three to one for girls. Common referral symptoms among preschoolers are: temper tantrums, specific fears, enuresis, and encopresis. Ego fragmentation underlies the more severe manifestations of maladjustment. The direct behavior of the child is more informative than are many indirect assessment procedures. The neglect which perpetuates such problems is most unfortunate in view of the potential benefits to the child of even such informal interventions as being given opportunity to

interact with a volunteer, young adult in recreational activities. Treatment of children by guidance of mothers has also proven beneficial with both ADV and DADV. Living where there is a greater sense of community reduces the risk of perpetuation of early symptoms. Some contradictory findings have persisted in the analysis of effects of preschool program experience upon later adjustment. It appears that ADV benefit less and DADV more from such experience. What is clear is that the demands of a preschool program can be too much for some under-age or extremely immature youngsters. The contrasts implied in the term under-age refer to the school group in which the child must adjust and compete rather than to some absolute reference point. School adjustment of ADV children consistently exceeds that of DADV, unless the DADV have had opportunity through a program to adapt to classroom procedures and the group activity setting. Such experience does provide for some catching up, although the advantage may be a short-term one. Early emphasis on academic skills before the child is ready cognitively or emotionally is known to increase problem behaviors and signs of tension (Westman, Rice, and Bermann, 1962; Thomas, Chess and Birch, 1968; Wilson, 1965; Comly and Hadjisky, 1967; Ilg and Ames, 1955; Wolff, 1961b; Ucko, 1965; Reiser and Brown, 1964; Furman and Katan, 1969; Kaffman, 1965; Smith and Appelfeld, 1965; Cassel, 1964; Bommarito, 1968; Weiss, 1962; Gott, 1964; Loughlin, 1966; Hammond and Skipper, 1962; Crawley, 1966; Wolff and Stein, 1967; Krider and Petsche, 1967; Hooper and Marshall, 1968; Mason and Prater, 1966). DADV and undesignated SES are studied equally often, and each slightly more frequently than ADV. Ethnicity is designated in only three studies. Age is usually designated, with fives most often studied.

Behavioral objectives.--Fives who have adjustment difficulties can improve. Fives initially entering a preschool program can develop good school adjustment. (Parental involvement appears to be essential to the improvement of poor adjustment. Younger or less mature boys who are having an initial preschool program experience should be carefully monitored for signs for poor adjustment.)

Fantasy

Summary of data.--From two to seven the child alternates between assimilative thought and thought adapted to others and to reality, with the latter mode only gradually gaining preeminence. This transition proceeds through the medium of play and eventually through formal games with rules. For this reason, in the preschool years the distinction between reality and fantasy is somewhat arbitrary--the child uses fantasy as a means of accommodating progressively to reality through the formation of symbols and cognitive structures. (See "Preference" for more discussion of this point.) In the later portion of these years--from about four or five up through seven years--representational play, imitation, and conceptual representation are positively related. Intuitive thought attests to the importance of imitative and imaged accommodation during the onset of representational thought. (See also "Imitation".) The tenuousness of reality is reflected in the confusion of fives regarding the internal versus external nature of dreams. Their expression of dreams reveals modified realism. The onset of dreams is in this period, at around three years. Dreams become progressively more disturbing between three and five years, resulting in fives awakening from dreams

and having difficulty returning to sleep. Fear of darkness follows a similar course, suggesting an increasing relation between the child's capacity to produce fantasy and his continuing difficulty in integrating the experience of fantasy within a more encompassing conceptual framework. Blind children show a similar progression but in slower motion, making clear the contribution of visual imagery to the normal rate of fantasy growth. DADV children from poorly organized families have unusually poor demarcation between reality and fantasy. Their inability to play effectively provides one clue to the possible etiology of this deficiency, since play is the procedure through which the child constructs reality. Thus, one suspects that the effect upon the child of family disorganization is mediated by its effect upon the child's capacity for play and fantasy. In fantasy, anxiety may work as an inhibitor. The uncertainties associated with family disorganization are possibly productive of such a heightened emotional arousal and hence of poor fantasy development.

In play, children reveal their concerns, uncertainties, fears, and questions. Themes of death and loss of parents are all too common among preschoolers to be ignored. It is through playing out these themes that the child eventually adopts a more realistic view. Doll play is frequently used in studies of Social Behaviors, especially in "Sex-typing" and "Aggression". Non-specialists should not be misled into believing that this is a way of getting the child to reveal what he does not wish to let others know. Instead, the child uses this medium to articulate and demonstrate what his other powers of conceptualization and expression represent as yet only most imperfectly. Doll play action relates positively to amount of talk between child dolls, with older children creating

more of both play and talk, and also more clearly using dolls as a medium of fantasy. The various indicators of maturity in doll play all relate positively to comparable signs in the child's dramatic play. Among ADV preschoolers, doll play appears to be a better tool for the education of ideas and feelings of those children who are already doing well. For children who do not yet engage in fantasy play effectively, adult initiation of doll play activities can foster the child's self-directed fantasies with peers. Further, it can be used in play that fosters fantasy. Exposure to ideas not usable in play seems not to have this effect. Fives do not yet produce much fantasy in drawing because of the imperfect state of their small motor representational skills, so play is a more satisfactory medium of expression for most children.

Children's stories depict themes of violence pervasively, followed in frequency by friendly themes, food and eating, and harm coming to people. Boys and girls show an increasing expansion from three to five years in their use of space in stories. They create decreasing external differentiation of their main characters because of the increasing use of varied characters. Over these years they increase in inner complexity of characters and fantasy; perhaps show a temporary decrease in realism; and give initial evidence of using planning in their management of thema. Fathers are of lower saliency than mothers in the stories of children throughout this age range. Children's stories can be scored also to reveal themes of trust, autonomy and initiative. Qualitative improvement of fantasy through intervention appears to be one effective approach to improving the cognitive status of DADV children (Piaget, 1967; Piaget, 1962; Shipman, 1967; Ilg and Ames, 1955; Wills, 1965; Pavenstedt and Others, 1967; Smilansky, 1968; Wurtz, 1960; Gordon and Cohn, 1963;

Fredlund, 1970; Tisza, Irwin,and Zabarenko, 1968; Marshall and Doshi, 1965; Marshall and Hahn, 1967; Dreyer and Rigler, 1969; Ames, 1966; Pitcher and Prelinger, 1963). Nondesignated or mixed SES studies exceed ADV and DADV combined. Only Anglo children are mentioned, but most studies are of undesignated ethnicity. Age comparisons are often explicit.

Behavioral objectives.--Many fives use fantasy in doll play, dramatic play and, to a lesser extent, in direct verbalization during story telling. Fives' distinction between reality and fantasy is poorly developed. Most fives can use fantasy more extensively than they do. (Fantasy productivity ultimately enhances the child's construction of social and physical realities. Opportunities for fantasy should be provided in preschool programs for ADV and DADV.)

CONCLUSIONS

In this part of the report, behavioral objectives for five year olds were constructed and justified using the data obtained in the literature search phase of the project. Data from the literature search were reassembled by behavioral categories by drawing upon as many demographic categories as had been studied, with reference to that particular behavioral characteristic. Because of gaps in the data, it was not possible to develop behavioral objectives for all categories; therefore, criteria were established for when an objective would be written and when data would be declared inadequate. On this basis, four categories "Construction with Manipulables," "Self-care Activities," "Play," and "Vitality" were dropped from the Cognitive Domain; and "Social-cultural-familial Factors" was dropped from the Affective Domain. Other categories were merged or the data recombined to make new categories when common elements of behavior were apparent. A panel of consultants was involved at various stages to enhance the professional judgment of the project staff.

A behavioral objective was defined as a description of expectations of a particular observable or otherwise directly measurable behavioral event, which is related to school performance, and which our data identify as being found among advantaged five year olds. Since these terminal objectives deal with an entire age year of the child's experience, generic groups of performances were used, where appropriate, to label the objective rather than limiting the objective to some isolated instance of the generic class.

Categories in which behavioral objectives were developed are listed below in Table I for each domain along with the pages on which these objectives are located.

Table I

Contents of Summaries from which Objectives are Derived

Psychomotor Domain

Balance, movement and coordination
- Gross motor control 13

Dominance, handedness and laterality
- Left-right discrimination 14

Growth and maturation
- Physical measures 15
- Nutrition 17
- Medical problems 19

Perceptual-motor abilities
- Drawing 21
- Copying 22
- Perceptual-motor (general) 23

Speech
- Articulation 24
- Imitative responses 25

Cognitive Domain

Attentional processes
- Attention 27

Ability specific
- Reading ability 29

Concepts
- Objects 33
- Number 42
- Time 44
- Causality 45
- Space 47
- Culture concepts 47

Language
- Production of syntactic structures 48
- Comprehension of syntactic structures 49
- Vocabulary 51

Mediational processes 52

Memory
- Short-term memory 56
- Recall 57

Perceptual processes
- Visual 58
- Auditory-visual integration 59

General cognitive
- Problem solving and logical thought 60
- Conservation 61

Affective Domain

Social behavior
- Aggression; Dominance 66
- Imitative behavior 70
- Sex-typing; Identification 72
- Development of controls 76
- Attachment; Dependency 80
- Maturity 83
- Prosocial behaviors; Introversion 86

Social perceptions and communications
- Status awareness 90
- Social abstraction 91
- Person preference 94
- Emotional communication; Affective awareness 97

Motivation
- Types of feedback the child can use 100
- Preference 111
- Stimulus variation 115

Intra-psychic factors

Temperament	118
Creativity; Creative processes	125
Self concept; Self awareness	126
Personality, global	127
Adjustment	129
Fantasy	131

From the foregoing analysis of empirical support for behavioral objectives, it is clear that affective objectives rest upon a richer, firmer, more diverse foundation of knowledge. For this reason, affective objectives occupy more space in the present statement than do psychomotor and cognitive objectives combined. This should not and cannot in candor be construed as due to our bias as investigators. Bias there is indeed--but its roots proceed from the nature of the research literature, which defines that knowledge base upon which contemporary, responsible, educational efforts should be based. Those, who like ourselves are concerned with the educational plight of the disadvantaged preschool child, can only wish that more were known substantively regarding the psychomotor and cognitive functioning and potential of American five year olds. But as we have defined our task, we cannot and will not speak facilely in the absence of knowledge. To do so would be to treat five year olds with undemocratic, sleight-of-hand tactics, and to flaunt our own principles as scientists in the service of education.

Our conclusion is simply this: that more must be learned about preschool children in those behavioral areas which have been empirically overworked but conceptually neglected by investigators. Clearly the great recent volume of study of cognitive variables during early childhood (perhaps over one-half of the total research effort of the past decade by our calculations; see Report 2) has yielded a surprisingly meager volume of answers. These vast continents of ignorance must be

explored more imaginatively--by forsaking the obsessive, unproductive preoccupations of the past with gross assessments of vocabulary and general intelligence; or with proving that children can be taught to conserve; or with other comfortably established but compensatorially unproductive constructs and approaches. American investigators seem prone to continue in their unrelenting clamor of trifling ceremoniously with Piaget, as they seek to reduce him to their own diminutive proportions. If we knew our own heterogeneous population as well as he does his, surely the course of educational action in the cognitive domain would be clearer. It seems that even the more imaginative of contemporary, early childhood investigators of cognitive processes are ensnared in this Zeitgeist, being themselves preoccupied with demonstrating that they can indeed change children's IQ scores. Surely, intelligence must be more than the intelligence tests measure; mediational processes must be more pervasive than is suggested by the limited study of reversal shifts; and children must develop concepts about much more than objects. These are the kind of data problems which seal us in ignorant silence, when our wish is to speak articulately to urgent needs.

A unique feature of the present approach, as is evident from the foregoing, is that the behavioral objectives are empirically derived rather than based on intuition or even on generally accepted, but untested assumptions about what is appropriate for the child. These objectives, however, must be used with some of the same cautions that would apply to any objective. Behavioral objectives, as stated, do not allow for the individual differences in children; yet these differences are ever apparent to those who are observant of child behavior. Our data

have sometimes supported differences between advantaged and disadvantaged children and between ethnic groups, but it has not been possible to show differential developmental patterns relative to the objectives developed. Since what is expected of a child needs to be realistic in terms of his psychomotor, cognitive, and affective characteristics, it becomes the responsibility of the adult to make certain assumptions regarding the child's characteristics and the steps through which he must proceed to reach the objective. It is possible that a specific objective may be unrealistic for any given child.

Some interrelationships of objectives in the different domains have been pointed out in this report, but systematic consideration of such interrelationships will likely prove to be a very important factor in the use of objectives. Such consideration begins after program objectives have been selected, because each selected set of objectives can have its own unique set of interrelations among objectives. For example, there appear to be constraints or limits to some affective aspects of the child's total personality development which are regulated by an upper limit of the sequential cognitive development of the total personality. One of the real problems of early childhood personnel and parent education lies in the failure of adults to recognize the upper cognitive limits of the child for certain kinds of relating, so that demands are made on the child for social-emotional behavior that is entirely beyond the possible purview of his experience or capacity at that age. These and other interrelationships need to be clarified if some selected set of objectives is to be of maximum value.

It should be emphasized that the list of objectives presented here is incomplete because some areas of behavior have not been studied in the

past decade. That is, since our literature search was limited to the last ten years, areas which have not been studied extensively during this time would be omitted. Anyone using these objectives should recognize that they will need to be supplemented by additional objectives based on generally accepted and previously tested assumptions, until further empirically based objectives can be developed. For example, earlier research on self-care activities provides a generally accepted basis for training children in this area. While updated research on DADV children would be helpful, the practitioner will be able to adapt or modify expectations and training experiences to fit these children.

Despite inadequacies, some of which have been pointed out, the objectives included in this report represent a large-scale effort to determine objectives which are justified by research findings. Some definite guidelines for program planners have been presented. Only as long as the objectives are viewed as guidelines rather than absolutes can an appreciable contribution to program planning result from this effort.

PART B--

EVALUATION INSTRUMENTS

INTRODUCTION

This is the second part of the third report in the project, Literature Search and Development of an Evaluation System in Early Childhood Education. Earlier reports have consisted of a summary of researched characteristics of three- through five-year-old children and a review of taxonomical procedures used to analyze the data. The first part of this report was Behavioral Objectives for five-year-old children derived from the research which had been reviewed.

The purpose of this part of the report is to provide a detailed review of available scales, tests, and inventories of preschool development and specifications on the appropriateness of these existing measures for use with preschool children. The instrument review actually consists of two parts, only the first of which appears in this report. The second part, which recommends the use of these instruments in assessing particular objectives plus the development of new measures, is part of the final report.

Our conception of program measurement differs in some ways from that of others. These differences have influenced both the project procedures and the organization of the present report. First, it seems to us that standard tests, rating scales, and inventories produce only a portion of data which are essential to understanding how the child is being affected by a program. Observational procedures and a variety of demanding technical procedures should play important roles as well. Further, those concepts of program evaluation are inadequate which focus only upon the child without directing attention to the characteristics, especially the classroom behaviors, of teachers and other personnel who are responsible

for implementing a particular program (Gotts and Pierce-Jones, 1968)[1]. In view of the probable involvement of parents in preschool programs some attention should also be directed to assessing those areas of parental behavior which may influence or be modified by the child's program involvement. Finally, process as well as outcome measures are required if one wishes to enhance favorable program effects and to delete unfavorable program features. This is especially important at this time in view of both the limitations of our knowledge of what effects programs produce and of what the specific goals of early childhood programs are (Butler, 1970; Scott, Eklund, and Miller, 1969).

In keeping with this orientation to preschool program evaluation, this report contains separate lists of (1) tests, rating scales, inventories, and standard evaluation equipment; (2) observational procedures used under both naturally occurring and standard task conditions; and (3) technical assessment procedures. These lists are designated, respectively, "Tests," "Observational Procedures," and "Technical Procedures," and appear in this order immediately following the test review section. All necessary details regarding selection of the instruments are included under "Procedures" or immediately preceding each list, so are not discussed further here.

The distinctions used to constitute the three separate lists are: Tests--instruments whose administration requires no technical skills beyond those which personnel already possess or can reasonably acquire through in-service training or individual study and which are usable by

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[1]All references are documented either at the close of this report or in the comprehensive bibliography to Report I.

teachers, aides, health services personnel or pupil personnel services workers, who are usually available to schools; Observational Procedures--assessment techniques which emphasize the training of the individual, the extent to which his observations agree with those of others, and the pinpointing of the particular behaviors or classes of behaviors which are to be counted or scaled; and Technical Procedures--assessment by methods which require technical expertise not now commonly available to schools. Techniques from the first two lists are clearly more appropriate for general use by programs for logistic reasons, although in terms of their assessment relevance for preschool children, some of the techniques from the third list are clearly to be sought after, if arrangements can be made to secure them. The major distinction between the first two lists is not in the overtness of the child's behavior, but in the extent to which the instrument as opposed to the observer's training is the major guarantee that a standard sample of the child's performance is obtained. Unfortunately, much contemporary evaluation is limited to techniques of the type represented in the first list only. The user of these lists will further find that some widely used procedures for assessing teacher and parent behavior are included, even though these technically fall outside the scope of the present project. This report provides the most comprehensive compilation to date of assessment procedures appropriate for use with preschool children.

Because of the differing ways in which these three lists will be used, the procedures for referencing them have been varied to match user requirements. List one entries are usually referenced to a supplier, outlet or author from whom permission and materials can be obtained. No obligation to supply is implied; suppliers often reserve the right to

determine that potential users are qualified or authorized to obtain particular materials. In a few cases these instruments have appeared in journals and are cited by author and year of publication. List two users will need access to procedures for obtaining satisfactory inter-rater performance in detecting and recording the criterion behaviors. To accomplish this, bibliographic reference is made to sources in which each procedure is discussed and used with a preschool sample. In this way, the user is exposed to the author's discussion of special considerations in its use with preschool children. Also often included are references to general methodological discussions of observational study of the characteristics in question. For the third list, the user is referred to appropriate technical documents or volumes.

Those tests from list one which met criteria for specific review (see Procedures) appear in a section following Procedures. They can be identified in the alphabetized list of tests by the appearance of an asterisk (*) immediately to the left of the test's name and an associated page reference to the right of the title. Testing considerations which are specific to particular lists appear in brief introductions preceding the lists.

PROCEDURES

This evaluation of instruments section of Report III is divided into four parts: search, acquisition, abstracting and test review, and criteria. Although these four parts are indicative of a sequential procedure, each of the four parts was ongoing from the summer of 1970 to the middle of June, 1971. We had expected that there would be overlapping and repetition of these sequences, but due to the widely dispersed literature, the delay in receiving tests, the difficulty in obtaining specimen sets, and the inaccessibility of some materials, such as OEO project developed instruments, there was an excessive delay in the search and acquisition phases.

Search

The search for instruments began in the summer of 1970. All major publishers of instruments were written, requesting catalogues of currently published instruments plus any pre-publication information of forthcoming instruments. At the same time, the Sixth Mental Measurements Yearbook (Buros, 1965), Tests in Print (Buros, 1961), Reading Tests and Reviews (Buros, 1968), and Personality Tests and Reviews (Buros, 1970) were searched. All of the Indiana campus sources were also searched, including: the Bureau of Educational Studies and Testing, the Institute for Child Study, the Reading Clinic, the School of Optometry, and the Speech and Hearing Clinic. From these sources a basic list of conventional instruments used with children three to five years of age, including those designated for kindergarten, was compiled. This list was further

expanded through information received from the Educational Testing Service's Test Bulletin, a serial publication, from personal communications, and from representatives of individual test publishers. An ERIC computer search was also utilized in the search for instruments. The Buros books provided an adequate search for standard instruments up through 1969. However, considerable difficulty was encountered in finding the more recently developed instruments. Many instrument titles were located in the literature search for the first project report. The instruments themselves, however, were seldom found sufficiently referenced in the literature for acquisition. The ERIC search yielded very few research or evaluation developed instruments for early childhood and virtually no instruments developed through OEO supported studies of the disadvantaged child. In order to acquire information on these recent project developed instruments, most of which were of great interest relative to the purposes of this report, it was necessary to write the project directors directly. It is fortunate that project directors such as Robert Hess and Carolyn Stern were willing to take time from their own schedules to provide materials; and it is unfortunate that standard test publishers or other outlets have not moved more rapidly to make some of these effective new instruments more generally accessible.

Acquisition

Information was first gathered from the locally available instruments. When applicable instruments were identified from publishers' catalogues, specimen sets were ordered. Several problems were encountered here. For example, some specimen sets include no technical information. Thus,

any information regarding reliability and validity for these instruments must, in effect, be determined by the user. These instruments were, nevertheless, retained in the test list with the publisher referenced. Some publishers do not supply specimen sets at all. Twenty-five to thirty-five copies must sometimes be purchased. Consequently, the cost of obtaining copies of instruments, to determine their usability, could be as high as $35.00. In several instances, publishers had no provision to sell manuals of technical information unless one purchased a complete kit of testing materials. Many publishers who did indicate that they have forth-coming publications were reluctant to offer pre-publication information. Finally, the delay in receiving materials from some publishers was excessive. Waiting time from the date of order to the date of shipping ranged from two weeks to four months. These types of problems are not at all infrequent and are found with small and large publishers alike. Surely, these problems must be insurmountable for some program directors, who must make decisions about test selection.

The 1,400 to 1,500 studies, which were abstracted in the original literature search, were a rich source of information on tests. A classified compilation was made of all formal and informal evaluation devices, as described in the Introduction. Frequencies of instrument usage over the last decade were accumulated in this way to indicate which procedures had been most valuable to early childhood investigators and program evaluators. In some instances, the abstracted studies were basic validity investigations of particular new instruments and, thus, constituted primary documents regarding them. Such instruments are often available to potential users only by returning to these original sources. Our method of referencing them in our listing has been by document citation rather than by supplier's name.

In addition, for those instruments, which were identified from the literature, but neither were published in that location nor were available through normal test channels, the authors were written or requested to submit whatever information available, e.g., a copy of the instrument, normative data, reliability, and validity. Copies of several instruments, together with pertinent statistical information, were largely obtained through personal contact with project directors and private individuals with expertise in the test and measurement area.

Abstracting and Test Review

Up to this point, the procedures described were used for all types of evaluation devices. An essential difference among types of instruments becomes apparent, however, at the point of considering their adoption for use in some particular program. The usability of instruments is a function of the types and training of available personnel within a program. We have made functional distinctions among types of instruments and grouped them accordingly to facilitate selection of devices that are congruent with the staffing of a given program. First, the list of Tests contains objective devices which are usable by teachers, and projective devices which are usable by personnel who are often part of or available to school systems. In either event, it can be presumed that available personnel are already prepared to use such instruments or can prepare themselves to do so through brief, informal, on-the-job training or through individual study. These are the kinds of devices which are documented in the Buros' series on tests. They are also the ones about which specific summary statements are made in the "Test Reviews" and to which

the balance of the present section of procedures refers.

Before the abstracting of instruments was begun, it was necessary to revise the abstract form (see Appendix A). To provide a more direct retrieval by ethnicity for describing the standardization samples, the ethnic groupings were arranged to be mutually exclusive. SES was retained. Program utilization was considered by providing categories for administration group size, amount of previous training necessary for administration and scoring, the type of materials used in testing, the child's task, and the administration time required. Since the normative data, reliability, and validity were too diverse to code, a second page was used to construct brief narrative reports. The second page was also used for any carryover for which there was insufficient space on the abstract sheet. For each instrument that was to be abstracted, coding was used to show which characteristic was being measured within the Cognitive, Affective, and Psychomotor Domains (see Appendix B).

The test reviews were written from this abstract form. Only the information available from the manual or reference was included. The amount of information in the test reviews varies because the available information for different instruments varies widely. This is partly true because what passes for a published "manual", may be anywhere from one page in length to well over one hundred pages. In our writing, due consideration was given to publishers' copyrights. Our intention for the test reviews is to provide enough information for the reader to decide whether he wishes to obtain a specimen set. It is not intended that the test review should replace the specimen set, over which copyright protection already exists. The user may obtain more complete information regarding the categories

listed in the test review by contacting the publisher or author cited directly below the test title.

Each test review is sub-divided into six categories: (1) Sample, (2) Administration, (3) Content, (4) Scoring, (5) Norms, and (6) Statistics. Information for each of the six categories was obtained from the abstract if it was available. The test reviews were organized from the abstracts as shown below.

Title, acronym, characteristic measured (C=cognitive, A=affective, P=psychomotor).

Publisher and/or reference (asterisk preceding the author's name indicates the reference is to be found in the bibliography in Report I).

Sample (includes ethnicity, numbers of subjects by age, SES, standardization date, and any stratification efforts).

Administration (includes group size, training required of the administrator, length of time for administration, and procedures of administration if they diverge from normal classroom testing).

Content (describes the type of testing material, response mode required of the child, and subtest and subscores. If the format of the test was unusual or substantially different from the majority of tests, it was described in this category).

Scoring (gives extent of interpretation required by the test administrator, i.e., whether the test is scored by hand directly, requires manual score conversion, or whether tables for conversion are supplied).

Norms (describes the normative tables provided in the document, e.g., percentiles, grade equivalents).

Statistics (describes available reliability and validity information).

If information for any of these categories is not present in a given test review, this means that the information was not available in the manual or other document abstracted.

Criteria for Test Inclusion

The minimal list of tests for review inclusion was determined by four criteria. All tests which met those criteria were included; yet we further added some other respected standby and promising, newly developed tests. The criteria were: (1) the test should be usable in a preschool program for diagnostic, screening, evaluation or research purposes; (2) it must have been used in at least three of the 1,400 to 1,500 recent studies abstracted during our literature review or must have received favorable mention from our consultants; (3) it should be administerable and scorable by a person with moderate training; and (4) it should have an objective scoring system. Consensual validation of the tests selected for review was achieved by consulting with several persons who are expert in the area of preschool testing. All tests recommended by these persons, which were not already included in the test review, were added.

The user of the review section will find, by referring to the alphabetized "Test" list which follows it, that he can quickly determine whether a particular test was reviewed and, if so, where its review appears. The above mentioned extensive "Test" list can be consulted in order to locate other tests which failed to meet our criteria for review inclusion, but which the user may wish, nevertheless, to locate. This is a comprehensive listing from which no instrument for five year olds was deleted, provided that we could supply information on how to locate the test. Some of these less used instruments are, in fact, recommended in later sections of Report III of this series as the tests of choice for the assessment of particular educational objectives.

The abbreviations used in the test review are: SEM = Standard Error of Measurement; E = Examiner; S = Subject; N = Number of subjects; K = Kindergarten; SES = Socioeconomic Status; LSES = Lower Socioeconomic Status; HSES = High Socioeconomic Status; MSES = Middle Socioeconomic Status; KR-20/-21 = Kuder-Richardson formulas-20/-21 for estimate of reliability; MA = Mental Age; CA = Chronological Age.

INVENTORY OF INSTRUMENTS: REVIEWS

Vision, Hearing and Motor Coordination (VHMC) CO, P4

California Test Bureau

Administration.--The VHMC is administered to a class by the teacher for the purpose of determining those children who will have difficulty taking a group pencil and paper test. The age range is K to first grade. The time required to administer the entire test is approximately 15 minutes. Test A has a three-minute time limit.

Content.--There are three tests (considered pretests): A) Visual Acuity, B) Auditory Acuity and C) Motor Coordination. These pretests only measure gross deficiencies.

Scoring.--If a child scores low on any test, he should be retested. If his score remains low, further testing is indicated.

Moore Eye-Hand Coordination Test (MEHCT) P4

Joseph E. Moore and Associates.

Sample.--The MEHCT was normed on 280 children ages five to six years five months. The sample included only MSES and UMSES Anglos. Ninety-eight per cent of the children had nursery school and K experience.

Administration.--The teacher demonstrates the task to the child. The child then performs the task three times.

Content.--The task required of the child is to place marbles on a board. There are two sets of eight marbles. One set is red; the other is green. The child is to place all red marbles first, then all green marbles.

Scoring.--The score is the total time it takes to perform the task three times.

Norms.--A supplementary table of norms for the 1968 sample is available. Ranges in seconds are given for ages 60 to 65 months, 66 to 71 months, and 72 to 77 months. Percentile ranks are given for the same age groupings.

Statistics.--Test-retest reliability is obtained with at least one week intervals, r=.95. Validity is presented as the instrument's ability to discriminate between the speed of coordination of children of different ages. A correlation of .63 was obtained between speed of eye-hand coordination and mental age as measured by the Stanford revision of the Binet test.

Auditory Discrimination Test (ADT) C1, P4

Language Research Association

Sample.--The ADT was standardized in 1958 with a sample size of 533 children five years and over. Sample included urban and non-urban children.

Administration.--The ADT can be administered by a classroom teacher to individual children. The response required is oral. The child must only say "same" or "different" to a pair of words read by E. The total test time is about five minutes.

Content.-- Word pairs are two types: different words and same words. The same word pairs are merely for validity of the test. Different word pairs are for discrimination score.

Scoring.-- The number of errors in each type of pair is a separate score. If a child scores greater than 15 on different word pairs and greater than 3 on same word pairs, the test is invalid. The different word pairs are used for determining development of auditory discrimination; the same word pairs are used for test validity.

Statistics.--Test-retest reliability, .91. Validity presented only as auditory discrimination to IQ, .32. Other validity established by giving results of number of children referred for remedial reading as compared to the number of that group that showed inadequate auditory discrimination.

Marianne Frostig Developmental Test of Visual Perception (FDTVP)
C1, C8, P4

Consulting Psychologists Press (*Maslow and Others, 1964)

Sample.--The FDTVP was last standardized in 1963 using 2116 subjects ages three through nine. Norms are given for ages four through eight. The sample was drawn from Southern California. Ninety-three percent were MSES. The rest were Mexican-Americans and Orientals; there were no Negroes.

Administration.--Although instructions are explicit, it is advised that a classroom teacher administer the test with the close guidance of a psychometrist or school psychologist. Two to three children may be tested at one time. The child only needs to mark the correct response in a booklet. The test is not timed but requires a little less than one hour.

Content.--The FDTVP consists of five areas: 1) eye motor coordination (drawing a line between lines); 2) figure ground (intersecting and "hidden" geometric shapes); 3) constancy of shape (recognition of geometric figures in a variety of sizes, shadings, etc.); 4) position in space (discrimination of reversals and rotation); and 5) spatial relationships (copying forms and patterns by connecting dots from a matrix of dots).

Norms.--There are several score conversion tables: 1) raw score to perceptual age (PA); 2) raw score to scale score; 3) scale score to perceptual quotient (PQ); and 4) percentile ranks of perceptual quotients. PA is defined as the performance of the average child in his corresponding age group. Scale scores = $\frac{PA}{CA} \times 10$. PQ is a deviation score where the median is 100.

Statistics.--Reliability and validity of subtests are given beginning with five year olds even though norms are given beginning with fours. Reliability test-retest for K (by subtest): 1) .33, 2) .46, 3) .83, 4) .61, and 5) .66 (N=55); split-half: 1) .59, 2) .93, 3) .67, 4) .70, and 5) .85 (N=364). Validity, r between Goodenough IQ and FDTVP PQ, $r = .460$ (N=299).

First Grade Screening Test (FGST) C2, C4, C7, A12, A20, A23, A49

American Guidance Service, Inc.

Sample.--The FGST was standardized in 1965 using 3500 K children stratified by SES, geographic location, family income, and school community.

Administration.--Although there are separate booklets for boys and girls, the test may be administered to both at the same time by the teacher in the classroom. The child is required to draw a circle around the correct picture or to draw a picture. The test should be administered in two sessions. The totaltest time is approximately 45 minutes.

Content.--The test consists of four basic sections: drawing and copying, social variables, identification and labelling, and memory.

Scoring.--Explicit instructions for scoring are given, including drawing samples. Scoring charts are given.

Statistics.--Reliability is test-retest given two weeks apart, r=.85. Standard error of measurement=1.88. Teacher ratings and standardized achievement test results were used for predictive validity.

Concept Assessment Kit--Conservation (CAK) C9

Educational and Industrial Testing Service

Sample.--The CAK was standardized in 1968 using 560 children ages four and five. Attempts were made to encompass all SES levels and racial groups. The sample schools ranged from 100 percent Anglo to 100 percent Negro. In the overall selection there was a slight bias toward LSES.

Administration.--A teacher with some moderate training can administer the test to individual children. Manipulations are required.

Content.--There are three forms of the CAK. Forms A and B deal with number, substance, weight, discontinuous quantity, two-dimensional space, and continuous quantity. Form C deals with area and length.

Scoring.--The child's response is oral and in two parts. He must first answer the question, "Are these the same?" and then "Why?" There are two scores, one for behavior (the answer to the first question) and one for explanation (the answer to the second question). In the explanation the child must demonstrate that he comprehends one or more of three principles: 1) invariant quantity, 2) compensation, 3) reversibility. E gives explicit instructions which may be repeated but not rephrased. There are six items on each form scored for behavior and explanation, one point scored for each or two points per item.

Statistics.--Reliability (KR-20) ranges from .95 to .97. Cross-validated Bentler Indices are .97 to .98. Intercorrelations between forms A and B are .94 and between first and second administration of form C, .91. Correlation between A and C and B and C are lower, .73 and .69, respectively. Relation to school achievement measures in first to third grade are moderate,as is relation to IQ.

Arthur Point Scale of Performance Tests (APSPT) C4, C7, C8

Psychological Corporation

Sample.--The APSPT was standardized in 1943 using 968 subjects ages four and one-half to fifteen and one-half. The sample description is "middle class American."

Administration.--Administration and scoring are explicit but would require moderate training. The test must be administered individually. The test requires individual manipulatives and visuals. The overall time to administer is not given, but one subtest, the Stencil Design, is timed at four minutes for each design.

Content.--There are five subtests: the Knox Cube test (Arthur revision), the Seguin Form Board (Arthur revision), the Stencil Design Test I, the Porteus Maze test (Arthur modification), and the Healy Picture Completion Test II. (Note: The Healy Picture Completion Test II is useless with children whose cultural background is inappropriate.)

Scoring.--Tables are presented for converting the raw score on each test to a point value. The total point score is converted, using tables, into age by years and months (MA). IQ is calculated by $\frac{MA}{CA} \times 100$.

Norms.--Chronological age norms were derived by first using the median score for each age group. The semi-interquartile range was the measure of variability (Q). The "smoothed medians" were derived from the formula:

$$\frac{\text{median}_2 - \text{median}_1}{\frac{Q_2 + Q_1}{2}} = \text{discriminative value}$$

where subscript 1 = median and Q of the younger group and subscript 2 = median and Q of the higher age group. The points obtained were summed to produce a point scale for each test. The point norms for the five tests (each weighted according to the discriminative value) were summed at each CA level to give the total median point score for each level

Basic Concept Inventory (BCI) C1, C2, C6

Follett Publishing Company

Administration.--The BCI is administered by a teacher to individual children. The test is not timed but requires 20 minutes. The child's response is either to point or repeat what E says.

Contents.--The test is in three parts. Part I is identification of objects in pictures; in Part II S repeats what E says and answers questions about the statement if S responds incorrectly; in Part III S discriminates sequencing of clapping and knocking on the table, also by repeating sequenced numbers said by E.

Scoring.--Scoring is one point for each incorrect response. In Part II there are four trials. If S responds correctly on trial one, he receives no points; if correct on trial two, he receives one point; correct on trial three, two points; etc. to failure on four trials, four points.

Statistics.--The author terms the BCI a criterion referenced measure as opposed to a norm referenced measure. Consequently, there are no norms, reliability, or validity.

Blum-Fieldsteel Developmental Charts (BFDC) P0, P1, P6

World Book Company

Administration.--The BFDC can be recorded by parents, teachers, or specialists. E records emergent behaviors.

Content.--The charts are based on Gesell's extensive data on child development. Chart 1 refers to self-care activities while Chart 2 refers to motor behavior.

Scoring.--On the vertical axis are the behaviors and on the horizontal axis are ages in months. There is a diagonal that cuts through the mean ages of the emergent behaviors on the vertical axis. This diagonal represents ages at which one-half of Gesell's sample first evidenced the respective behaviors. The age where a behavior is observed in a child is

plotted on the chart. It is then compared with the diagonal.

A Book About Me (BAM) A49

Science Research Association

Administration.--The BAM can be administered in a classroom by the teacher. The method of responding is optional. Depending on group size, the child can point, mark, or respond orally. There is no time limit. The child is given a booklet of pictures that he is to identify as pertaining to his social and familial environment.

Content.--The BAM can be used in whatever way the teacher would like to use it, e.g., in parent conference reporting, as a continuous progress record, to encourage expression. The child can be asked to circle particular items or to circle "what his mother does."

Norms.--Four hundred fours and fives were used to obtain percentage of choices by ages.

Bristol Social Adjustment Guide (BSAG) A38

Educational and Industrial Testing Service

Sample.--The BSAG is used for school entry. A sample of 299 males and 307 females ages five through six were rated. The children were from mixed SES.

Content.--The teacher rates each individual child. The guide describes nine areas: 1) inhibition, 2) depression, 3) anxiety,(toward adults), 4) hostility toward adults, 5) unconcern for adult approval, 6) anxiety for approval (children), 7) hostility to children, 8) restlessness, and 9) withdrawal.

Scoring.--Plastic overlays are used to ease scoring. Descriptive literature is given for each area by scores.

Norms.--There are separate percentile rankings for DADV children by total score and by subscale scores.

American School Reading Readiness Test (ASRRT) C0, C1, C2, C8

Public School Publishing Company

Sample.--The ASRRT was standardized in 1940 using 1091 mixed SES fives.

Administration.--A teacher can administer the ASRRT in groups of 10 to 15 children if an aide is used.

Content.--The child is required to mark in a booklet. The test measures eight areas: 1) vocabulary, 2) discrimination of letter forms, 3) discrimination of letter combinations, 4) recognition of words, 5) recognition of words (matching), 6) discrimination of geometric forms, 7) following directions, and 8) memory of geometric forms.

Norms.--Percentile ranks are given.

Cain-Levine Social Competency Scale (CLSCS) C1, A19, P6, P7

Consulting Psychologists Press

Sample.--The CLSCS was standardized in 1963 on 716 TMR children.

Administration.--The instrument is an interview conducted with the child's parents.

Content.--The test covers four areas: self-help, social skills, initiative, and communication.

Scoring.--Items for each subscale are summed and converted to percentiles.

Statistics.--Internal consistency (odd-even) is given for sex by CA (range .50 to .92). Subscale to total score intercorrelations range .59 to .73. Test-retest r = .88 to .98. Validity presented by correlations with other variables, i.e., IQ, social competency, which are generally weak to moderate. Correlations between the CLSCS and number of children in the family, occupation, income, and education of parents are practically zero.

California Short-form Test of Mental Maturity (CTMM) C0, C5, C6, C7

California Test Bureau

Sample.--The CTMM was standardized in 1957 using 222 fours and fives. Seven geographic locations and 253 school districts comprised the sample.

Administration.--A teacher can administer the test to groups of four to six children. The test is timed and requires 34 minutes. The child is required to mark an "X" on the correct response.

Content.--There are seven scales distributed among four factors--Factor I, Logical Reasoning: 1) opposites, 2) similarities, 3) analogies; Factor II, Numerical Reasoning: 1) numerical values, 2) number problems; Factor III, Verbal Concepts: verbal comprehension; Factor IV, Memory: delayed recall.

Scoring.--Raw scores are converted to percentiles and plotted on a profile chart.

Norms.--IQ equivalent scores are given in tables. IQ is separated into language and non-language. Grade placement index is also given. Intellectual status index is used to determine whether a child with a given IQ and CA can be expected to perform above or below his classmates.

Statistics.--Reliability KR-21 on Factors I-IV, .41 to .66 with .78 for total. Content evaluation used the Stanford-Binet (S-B) MA as criterion. The CTMM was scaled to the S-B after the test was completely developed. Comparisons are made with the S-B. Other tests used for comparison do not include this age level.

California Test of Personality (CTP) A2, A15, A18, A19, A48, A49

California Test Bureau

Sample.--A sample of 4500 children ages five and over were tested. SES was mixed. The sample included 85 percent Anglo; the rest were Mexican-American, Negro and other.

Administration.--The CTP can be administered by a teacher to a small group but individual testing is suggested. E reads the items aloud and the child marks "yes" or "no." There is no time limit, but the test requires approximately 45 minutes.

Content.--There are two components: I, personal adjustment and II, social adjustment. In component I there are six areas: 1) self-reliance, 2) sense of personal warmth, 3) sense of personal freedom, 4) feeling of belonging, 5) withdrawal tendencies, and 6) nervous symptoms. In component II there are six areas: 1) social standards, 2) social skills, 3) anti-social tendencies, 4) family relations, 5) school relations, and 6) community relations.

Scoring.--Scoring is done by either hand or machine.

Norms.--Special subgroup norms are available on request from the California Test Bureau booklet entitled "Summary of Investigations," Number One, Enlarged Edition, California Test of Personality.

Statistics.--Reliability KR-21 range r = .51 to .88, total, .88.

Cognitive Abilities Test (CAT) C0, C2, C6, C9

Houghton Mifflin Company.

Sample.--The CAT was standardized in 1968 using 2686 K through third grade children. The sample was selected from 72 different communities representing 40 states. Populations centers ranged in size from one million to less than 5,000. For the K level, cities in which 80 percent of the K enrollment was found in the first grade were used.

Administration.--A classroom teacher can administer the test. Individual testing is recommended for the first half of K and group testing with a maximum of eight is recommended for the second half of K. The teacher reads the question and the child makes the appropriate response. The CAT may be shortened by eliminating items indicated by asterisks. Time of the long form is approximately 54 minutes. It is suggested that the test be given in four sittings each on a separate day.

Content.--There are four subtests: 1) oral vocabulary, 2) relational concepts, 3) multi-mental ("one that doesn't belong"), and 4) quantitative concepts.

Norms.--There are four tables of norms: 1) deviation IQ, 2) percentile ranks of IQ, 3) stanine equivalent of IQ scores, and 4) grade percentiles.

Statistics.--KR-21 reliability of the regular form, .89, shortened form, .88 (N=300 per grade). Factor analysis is used with the Lorge Thorndike Intelligence Test, Multi-level Edition, for construct validity. Eighty-three percent of the variance is accounted for by the general factor "general reasoning." Factor analysis is only on the third grade sample.

Detroit Kindergarten Test (DKT) C0, C2, C4

World Book Company

Administration.--The DKT can be administered by the classroom teacher to individual children. The teacher reads the item and the child points to the correct response. Administration time is approximately 12 minutes.

Norms.--A table of age norms in months to raw score points is given.

Detroit Test of Learning Aptitude (DTLA) C1, C7, C8, C9, A49, P4

Bobbs Merrill

Sample.--The DTLA was standardized in 1935 using 50 children for each grade level of ages three through six (MA). The standardization sample was selected on the basis of being 1) in their normal grade for age and 2) between 90-110 IQ as measured by a standardized group intelligence test.

Administration.--The test can be administered individually by a classroom teacher. E reads the question and S responds orally, marks, or points, depending on the subtest.

Content.--One subtest requires drawing. There are 19 subtests, only 13 of which apply to the three through six MA level.

Norms.--Norms are given for each of the subscales by age in three-month intervals.

Statistics.--Test-retest reliability after five month interval, r = .95.

Haggerty-Olson-Wickman Behavior Rating Schedules (HOWBRS) A1, A40

World Book Company

Sample.--The HOWBRS was normed on 790 children five years of age and older.

Administration.--The test is a teacher rating scale comprising 35 items. The teacher places an "X" under the descriptor within the item that best reflects the child.

Scoring.--Each descriptor has a weighted value. The values are summed.

Norms.--A table of percentile ranks is given.

Statistics.--Split-half reliability, r = .92; inter-rater reliability, r = .72. Validity is in terms of clinical cases and subsequent histories.

Kuhlman-Anderson Test (KAT) C4

Personnel Press, Incorporated

Sample.--The KAT was standardized in 1965 using 1283 K children. The norm sample was selected from eight states east to west and north to south. SES of community, size of community, and geographic location were considered.

Administration.--A teacher with moderate training can administer the test to groups of 10-15 children. E reads the directions and cannot repeat them. The child responds by marking the correct item. The test is timed and requires 60-75 minutes.

Content.--There are eight divisions covering six areas: 1) identifying what is wrong with the picture, 2) identifying what is missing, 3) contextual cues or object identification using concepts, 4) object comparison, 5) perceptual discrimination, and 6) quantity.

Statistics.--Test-retest reliability with a two-month interval, r = .85. Odd-even reliability, r = .95 corrected. Several achievement tests and the Stanford-Binet were correlated, range .54 to .77.

Lorge-Thorndike Intelligence Tests (LTIT) C4

Houghton Mifflin Company

Sample.--The LTIT was normed on 136,000 children from grades K through 12. Level 1 is for K only. SES was mixed.

Administration.--A classroom teacher can administer the test to a class. Time required is about 30 minutes. Children are to circle the correct response.

Content.--The Level 1 test involves four kinds of tasks: 1) circling

object identified from the spoken word, 2) circling state-of-affairs, 3) circling object that is not there, and 4) joining relationships.

Norms.--Norms are given for raw score to IQ, percentile by grade, and age equivalents.

Statistics.--Reliability form A to form B, r =.81; odd-even, r = .91; test-retest over three-year period, r = .75 verbal, .58 nonverbal. Standard error of measurement in IQ points ranges from 6.0 to 7.9 for average raw score points 10 to 50, respectively. Correlation between LTIT and CTMM, .71; between LTIT and KAT, .41; between LTIT and S-B, .72.

Minnesota Preschool Scale (MPS) C4

Educational Test Bureau

Sample.--The MPS was standardized in about 1935 using 900 children ages 18 months to six years. The sample was representative of SES groups and occupations of the father. The distribution was based on the 1920 Minneapolis census.

Administration.--The test is best administered by a specialist to individuals. Manipulatives and visuals are used. The child must either point, mark, arrange, or reply orally.

Content.--There are 26 tests covering drawing, copying, sequencing, fine motor control, memory, etc.

Scoring.--Explicit scoring instructions are given at the end of each test. The unit of measure is the C score.

Norms.--Tables are provided to convert C scores to IQ. Tables are also given for percent placement. Verbal and nonverbal scales are given.

Statistics.--Test-retest reliability using two forms given seven days apart, range from .68 to .94 verbal, .67 to .92 nonverbal, and .80 to .94 combined.

Murphy-Durrell Reading Readiness Analysis (MDRRA) C0, C7

Harcourt, Brace and World

Sample.--The MDRRA was standardized in 1964 with 12,231 entering first graders in 65 school systems in 12 states. SES levels were mixed.

Administration.--The child marks the correct response. No time limit is given, but the test requires two class periods. The test may be given by a teacher in the classroom.

Content.--There are three subtests: 1) phonemes, 2) letter names, 3) learning rate.

Norms.--Percentile ranks on each of the three subtests and total score are given. Quartile ranges are given also for grouping purposes.

Statistics.--Reliability for the three subtests and total score, range .88 to .98. Standard error of measurement, range from 1.5 on learning rate to 3.5 on total test. Correlation between MDRRA and Metropolitan Readiness Test, .80; MDRRA and Pintner-Cunningham Primary Test, .64. Predictive validity, correlation of MDRRA to Stanford Achievement Primary I, range .38 to .66.

Otis-Lennon Mental Ability Test (OLMAT) C4

Harcourt, Brace and World

Sample.--The OLMAT was standardized in 1967 using 6,000 K children. The total sample included children five through eight years old drawn from 50 states stratified as to school type, SES based on income, and enrollment.

Administration.--The test requires moderate training to administer to groups. The child marks the correct response. Administration requires approximately 33 minutes and should be done in two periods.

Norms.--Norms are given for performance by age, deviation IQ (DIQ), percentile ranks, and stanines. Percentile ranks and stanines are also given for performance by grade.

Statistics.--Reliability KR-21, .88; alternate forms reliability by grade, .83. Standard error of measurement, 3.9 (raw score). Alternate forms reliability by typical ages within level, .81. Standard error of measurement, 7.0 (DIQ points).

Maturity Level for School Entrance and Reading Readiness (MLSERR)
C5, A17, P0, P4

Educational Test Bureau

Administration.--The MLSERR is a rating scale that can be completed by anyone who is in a position to observe the child.

Statistics.--The scores of 262 K and first graders are used for comparison. Median scores and standard deviations are given for K and first grade in public and private schools and by group judged ready for school and group judged not ready for school by teachers (the teachers grouped the children before testing). The test scores between groups (ready versus not ready) are significant, $P < .05$. Stability coefficients from 1958 to 1959 range from .30 to .73. Children's scores from one private school were correlated to the First Grade Screening Test, $r = .71$ for one class, .61 for the other class.

Mental Abilities (MA) C4

Scholastic Testing Service

Administration.--The MA may be given by the classroom teacher to the class. The range of the test is for K and first grade. E gives explicit instructions and the child marks the correct response. The test is timed.

Scoring.--Scoring is done with a key.

Norms.--A table is given for converting raw score to MA in years and months. IQ is hand converted according to the formula $\frac{MA}{CA} \times 100$.

Metropolitan Readiness Test (MRT) C0, C1, C2, C8, P4

Harcourt, Brace and World

Sample.--The MRT was standardized in 1964 using 12,231 early first grade children. The sample was drawn from 12 states throughout the United States.

Administration.--The test can be administered by a classroom teacher to a group of 10-15 children. E gives instructions and the children mark the correct response. Two subtests (3 and 6) are timed. The total time required is about 60 minutes. It is suggested that administration be done in three periods.

Content.--There are six subtests: 1) word meaning, 2) listening, 3) matching, 4) alphabet, 5) number, and 6) copying. An optional seventh test is Draw-A-Man.

Scoring.--Explicit scoring instructions are given.

Norms.--Tables are given for converting the score to percentile rank. There is also a table for probability of success.

Statistics.--Odd-even reliability on three samples ranges from .91 to .94; standard error of measurement, range 3.1 to 3.3. The MRT is correlated with the Murphy-Durrell Reading Readiness Test and the Pintner-Cunningham Primary Test, total $r = .80$. Predictive validity MRT to Metropolitan Achievement Test and the Stanford Achievement Test, range .52 to .67.

Preschool Attainment Record (PAR) C3, A22, P5

American Guidance Service

Administration.--Administration requires a specialist. The child must respond orally and engage in manipulation.

Content.--The PAR is an extension of the Vineland Social Maturity Scale. Scores are obtained for articulation, manipulation, rapport, communication, responsibility, information, ideation, and creativity. Specific definitions are given for each item.

The Preschool Inventory (PI) C0, C2, C8, A38, A49

Educational Testing Service

Sample.--The PI was partially standardized in 1965 using 699 children ages three through six. Most of the sample were Head Start children. Eighty percent were from Syracuse, New York.

Administration.--The test should be administered by a specialist to individuals. There are manipulatives and visuals. The child is to respond orally, to arrange, and to point. The time required is about 15 minutes.

Content.--Four factors were identified using factor analysis: 1) personal social responsiveness (knowledge of personal world, name, age, parts of body) and child's ability to establish rapport or communicate with another; 2) associative vocabulary (ability to demonstrate awareness of the connotations of words); 3) concept activation numerical (ordinal or numerical relations), and 4) concept activation sensory (color, size, shape, and motion).

Norms.--Norms are given for both middle class and lower class.

Statistics.--Split-half reliability, .97 for original 161 items. After shortening to 85 items, split-half, r=.95.

Pintner-Cunningham Primary Test (PCPT) C4

Harcourt, Brace and World

Sample.--The PCPT was normed on approximately 10,000 K and first grade children (ages five through seven).

Administration.--A teacher with moderate training can administer the test to a classroom as long as there are aides. The child only needs to mark the correct answer. The test is timed, with approximately 15 minutes total time required.

Content.--The test is divided into seven parts: 1) common observation, 2) esthetic differences, 3) associated objects, 4) discrimination of size, 5) picture parts, 6) picture completion, and 7) dot drawing.

Norms.--Tables are given for converting raw score by CA to IQ.

Statistics.--Predictive validity given on 1958 sample. Several tests were correlated, range .46 to .63. Split-half reliability for grade one, .84.

Stanford Early School Achievement Test (SESAT) C0, C1, C2, C3, C6

Harcourt, Brace and World

Sample.--The SESAT was standardized in 1968 with a sample of 8,310 K children and 11,106 first graders from 39 school systems representing 25 states. The sample was stratified on family incomes and years of schooling.

Administration.--The child must mark the correct response. A classroom teacher can administer the test to a group of six to ten children. It is suggested that the test be administered in five sittings. Total time required is approximately one and one-half hours.

Content.--There are four areas tested: 1) the environment (identification of), 2) mathematics (conservation, space, volume, etc.), 3) letters and sounds, and 4) aural comprehension.

Statistics.--Means for overcoming difficulties are discussed in the manual. Split-half, odd-even reliability for the range of four subtests, .76 to .85. Standard error of measurement, 2.3 to 2.8 corrected. Interrelation between SESAT and Otis-Lennon Mental Ability Test, .74.

Short Test of Educational Ability (STEA) C2, C3, C6, C8

Science Research Association

Sample.--The subjects in the norm sample were from the Chicago area.

Administration.--The STEA can be administered by a classroom teacher to a class. The child must mark the correct response. Test time is approximately 30 minutes.

Norms.--Tables are provided for conversion of raw score to IQ, IQ to percentile, and stanines for the total age population (five through nine years).

Tests of General Ability (TGA) C2, C4, C6, C8

Science Research Association

Sample.--The TGA was standardized in 1960 using 490 children in K to grade two.

Administration.--A classroom teacher can administer the test to a class. The child marks the correct answer. Time required is approximately 35-45 minutes.

Content.--The test is in two parts: 1) cultural-general knowledge of surroundings and 2) abstract reasoning through geometric forms.

Norms.--There are tables for grade expectancy, mental age, IQ and part score norms.

Statistics.--Split-half reliability, .86; KR-21, .85. Standard error of measurement, approximately seven IQ points for IQ around 100. Correlation with Kuhlman-Anderson Test, .58. Correlations are given for content areas and teachers' grade averages.

SRA Primary Mental Abilities (PMA) C0, C6, C8, P4

Science Research Association

Sample.--The PMA was standardized in 1953 using 1200 children ages five through seven.

Administration.--The test can be administered by the classroom teacher to a group of six to ten children. The child must mark the correct answer. The test is timed and requires a little over one hour. It is suggested that it be given in two periods.

Content.--The test consists of five areas: 1) verbal meaning, 2) perception, 3) quantitative, 4) motor (sensory coordination), and 5) space.

Statistics.--Spearman-Brown reliability for the total test, .96; for subtests, range .77 to .95. Correlation to several achievement tests, range .50 to .64 for predictive validity.

School Readiness Survey (SRS) C0, C1, C2, C8, A49, P4

Consulting Psychologists Press

Sample.--A group of 842 children ages four through six were tested.

Administration.--The SRS is administered to children by their parents. The child responds orally, marks, and points.

Content.--The survey has seven sub-areas plus a general readiness check list: 1) number concepts, 2) discrimination of form, 3) color naming, 4) symbol matching, 5) speaking vocabulary, 6) listening vocabulary, 7) general information.

Scoring.--Child should score between 70-75 to be "ready."

Statistics.--Test-retest reliability (June-October), .79. Teacher ratings compared with parent ratings showed parents rated an average of 2 to 5 points higher. Teachers rated children independently of test scores as to amount of progress (excellent to very little) after three and one-half months in school. Scale scores correlate to teacher ratings, .39.

Van Alstyne Picture Vocabulary Test (VAPVT) C0, C2

Harcourt, Brace and World

Sample.--The size of the sample is not given. The only description of the sample is "selected preschool children," ages four through six.

Administration.--The VAPVT can be administered to an individual by a teacher. The child must point to the correct response.

Content.--There are 60 items, all of which are vocabulary meaning or phrase meaning.

Norms.--Tables are given for raw score to MA, percentile rank to IQ. There is no table for conversion to percentile rank. It would be necessary to compute the percentile rank to enter the table.

Statistics.--Split-half reliability:

ages	r	SEM
4-4.11	.85	2.9
5-5.11	.76	3.0
6-6.11	.71	2.8
7-7.11	.72	2.0

Correlation to Stanford-Binet, .68 one set of groups, .71 another set.

Valett Developmental Survey of Basic Learning Abilities (VDSBLA) C1, C2, C5, C8, P0, P4, P7

Consulting Psychologists Press

Administration.--The VDSBLA is a survey instrument used by the classroom teacher to rate each child. Manipulatives must be used but are commonly available items. The child must answer either orally or by pointing. The items may be selected or the whole instrument can be used.

Content.--There are 230 items. The subtests are: A) motor integration and physical development, B) tactile discrimination, C) auditory discrimination, D) visual-motor coordination, E) visual discrimination, F) language development and verbal fluency, G) conceptual development. The items were chosen from several tests.

Norms.--Norms for each item are given in age beside the item.

Visual Motor Gestalt Test (VMGT) P4

The American Orthopsychiatric Association

Administration.--The VMGT can be administered to individuals by a specialist only. The method of administration is flexible according to what is easiest for the subject. The test is used for ages three to adult.

The VMGT is used as a clinical test but could be used for a motor test.

Scoring.--There are sample pictures for scoring.

Norms.--One table is presented, age to reproduced drawings. Age guidelines are thus available.

Verbal Language Development Scale (VLDS) C0, C1

American Guidance Service

Sample.--The VLDS was normed on 120 children ages one through twelve. The sample was selected from urban and rural areas, five boys and five girls for each age level.

Administration.--A parent or teacher rates the child.

Content.--Four skills are identified: 1) listening, 2) speaking, 3) reading, and 4) writing. This instrument is an extension of the Vineland Social Maturity Scale.

Norms.--Tables are given for raw score to language age equivalent.

Statistics.--Split-half reliability, .98.

Vineland Social Maturity Scale (VSMS) C3, C8, A19, A49, P0, P4, P6

Educational Test Bureau

Sample.--The VSMS was standardized in 1936 using 620 subjects ages birth to 30.

Administration.--The instrument is a rating scale administered by a specialist. Information is given to E by the parents, guardian or teacher. The item is recorded but also additional information is noted. Order of item questioning is at the discretion of E.

Content.--Areas of the test include 1) self-help (general, eating, and dressing); 2) locomition; 3) occupation; 4) communication--self direction, and 5) socialization.

Scoring.--Scoring of the items is as follows: (+) = item is clearly demonstrable and habitually performed; (+F) = items not performed at the time of the interview because of some special restraint or lack of opportunity but which S formerly did perform; (+0) = S does not perform because of special restraint but probably would perform if restraint were removed; (+) = transitional or emergent state; (-) = S has not succeeded at all or only rarely. Formula is given for conversion of raw score to age score and conversion to ratios or quotients.

Norms.--A table is given for converting total scores to equivalent social age values.

Wechsler Intelligence Scale for Children (WISC) C0, C1, C2, C3, C4, C8, P4

Psychological Corporation

Sample.--The WISC was standardized in 1949 using 2200 subjects ages five through 15. There were 100 boys and 100 girls for each age level. The sample was selected by geographic areas, urban-rural populations, and parental occupations.

Administration.--A specialist should be used to administer the test to individuals. Both manipulatives and visuals are used. The subject must respond orally and arrange the manipulatives. The test is timed. Administration instructions are explicit.

Content.--Areas of tests are 1) general information, 2) general comprehension, 3) arithmetic, 4) similarities, 5) vocabulary, 6) picture completion, 7) picture arrangement, 8) block design, 9) object assembly, 10) coding or mazes. Tests 1-5 are verbal tests; tests 6-10 are performance tests.

Scoring.--Scoring instructions are explicit.

Norms.--Tables are given for converting raw scores to scaled score equivalents, conversion of verbal and performance scale scores to IQ, and conversion of full scale scores to IQ.

Statistics.--Intercorrelations among subtests are given. Split-half reliability given for ages seven and one-half, ten and one-half, and thirteen and one-half only.

Wide Range Achievement Test (WRAT)

Guidance Association

Sample.--The WRAT was standardized in 1957 using 15,000 children ages five through eleven and twelve through adult.

Administration.--A teacher with moderate training can administer the test to groups of four to six. The subject responds orally or points. The test is timed.

Content.--Subtests are 1) reading, 2) spelling, and 3) arithmetic.

Norms.--Tables are given for means and standard deviations of raw scores for each subtest by age.

Statistics.--Split-half reliability for fives, .98 for reading, .97 for spelling, .96 for arithmetic. Standard error of measurement 1.10 for reading, .86 for spelling, .88 for arithmetic. Many other tests are correlated with the WRAT for concurrent validity range .74 to .93. Cross-validation range .71 to .93. Tables for intercorrelations between various IQ tests and the WRAT are given.

Wechsler Preschool and Primary Scale of Intelligence (WPPSI)
C1, C2, C4, C5, C6, C8, P4

Psychological Corporation

Sample.--The WPPSI was standardized in 1966 on 1,200 children ages four to six and one-half. The sample was stratified by age, sex, geographic area, urban-rural residence, and white/non-white ratios according to the 1960 census.

Administration.--The test is administered to individuals by a specialist. S's must respond orally, mark or draw, point, and arrange. There are ten tests to be administered at one sitting, but since the total test time is approximately 50 to 75 minutes, the testing period may be discontinued and continued at another time if S's appear tired.

Content.--The ten tests are grouped into two areas, Verbal and Performance. The Verbal group includes Information, Vocabulary, Arithmetic, Similarities, Comprehension, and Sentences (supplementary tests). Performance includes Animal House (color matching to animals), Picture Completion (identify what is missing from the picture), Mazes (draw a line from to start to finish), Geometric Design (copy design), Block Design (arrange blocks identically to design).

Scoring.--Explicit scoring instructions are given for each test.

Norms.--Tables are presented for scoring the Animal House test, scaled score equivalents of raw scores by age, and IQ equivalents of sums of scaled scores for Verbal and Performance IQ as well as total scale IQ equivalents.

Statistics.--Means and standard deviations by age for Verbal, Performance, and total scaled scores, percentile ranks for IQ and intelligence classifications are given. A table, by age, of correlations (odd-even technique with Spearman-Brown correction), and a table of intercorrelations of tests are given. Stability coefficients for a sample of 50 K's tested 48 to 117 days apart are given. Correlations are given for the WPPSI with the Stanford-Binet Intelligence Scale, Form L-M, the Peabody Picture Vocabulary Test, Form A, and French's Pictorial Test of Intel ligence.

Peabody Picture Vocabulary Test (PPVT) C4, C5

American Guidance Service Incorporated

Sample.--The PPVT was standardized in 1958 using 4,012 subjects ages two years six months to 18 years. The sample consisted of white children from the Nashville, Tennessee area.

Administration.--Individuals can be administered the test by a classroom teacher. It is not timed but requires 10 to 15 minutes to complete. E says a word and S is to point to the correct picture.

Content.--There are 150 presentations and two forms, A and B.

Scoring.--The test record includes behavior and physical characteristics apparent during the testing period. Explicit scoring instructions are given.

Norms.--The following score tables are given: mental ages for raw scores, IQ's for raw scores, percentiles for raw scores. All tables are given by age.

Statistics.--The two forms, A and B, were used to obtain reliability coefficients. Correlations range from .67 at the six-year level to .84 at the 17- and 18-year level with a median of .77. The SEM for IQ's ranges from 6.00 to 8.61, the median being 7.20. Validity was obtained for individual items and the total test. Rationale is presented for content and construct validity. For congruent and concurrent validity, various tests are correlated with the PPVT for different samples. The other tests include the Stanford-Binet, Van Alstyne Picture Vocabulary, Ammons Full-Range Picture Vocabulary, and the Columbia Mental Maturity Scale. References are given for other studies.

Parent Readiness Evaluation of Preschoolers (PREP)

Priority Innovations Incorporated

Administration.--The PREP is an instrument administered by parents to their children. The parent reads the questions or statements and the child completes them. In the motor-coordination test, the child must draw.

Content.--There are two basic sections, Verbal and Performance. In the Verbal section there are eight subtests: 1) general information, 2) comprehension, 3) opposites, 4) identification, 5) verbal associations, 6) verbal description, 7) listening, and 8) language. In the Performance section there are five subtests: 1) concepts, 2) motor coordination, 3) visual-motor association, 4) visual interpretation, and 5) memory.

Norms.--Tables of raw score ranges by age for each subtest and combined categories are given. Along with the test booklet and administration manual there is a "Parent Handbook: Developing Your Child's Skills and Abilities at Home."

Lincoln-Oseretsky Motor Development Scale (LOMDS) PO

C. H. Stoelting Company

Sample.--The LOMDS was standardized in 1950 using 749 S's ages six to fourteen. The sample was drawn from central Illinois and included moderate to low moderate SES.

Administration.--The test is administered to individuals by a specialist. The tasks vary from fine motor coordination to gross motor coordination. The only timing required is the length of time it takes to perform a task. Since the nature of the tasks is physical, frequent rest periods are advised.

Scoring.--Each of the 36 items on the test is scored on a three-point system. Explicit instructions for administering and scoring are given. The items are arranged in order of difficulty.

Norms.--Norms are presented for each sex at each age level. Raw scores can be translated into percentile scores.

Statistics.--The split-half reliability coefficients for each sex at each age level range from .59 to .93. The odd-even reliability coefficient for all ages for males is .96 (N=380) and for females, .97 (N=369). Validity coefficients presented are correlations of total score with age (.87 for males and .88 for females).

Peabody Individual Achievement Test (PIAT) CO

American Guidance Service

The PIAT was standardized in 1969 using 200 subjects, approximately half boys and half girls, grades K to 12. The sample was stratified, using the 1967 census, on nine geographic divisions, with one urban, one suburban, and one rural school in each division. There were 84.4 percent Anglo, 11.3 percent Negro, and 4.3 percent other in the sample.

Administration.--Individuals are administered the PIAT by someone with moderate training. S is required to mark, point or respond orally.

Content.--The PIAT is in two volumes. Volume I has two subtests, mathematics and reading recognition. Volume II has three subtests, reading comprehension, spelling, and general information. The reading comprehension subtest is not applicable to non-readers.

Scoring.--The subject must make five consecutive correct responses to establish the basal response. The ceiling is reached when the subject has five errors in any seven consecutive responses. Each of the subtests consists of 84 multiple-choice items, with the exception of the reading comprehenson subtest, which has only 66 of the 84 items. The first 18 items of it are part of the reading recognition subtests.

Norms.--Norms tables are given for grade equivalents, percentile ranks by grade, age equivalents, percentile ranks by age (five years three months to 18 years three months), and normalized standard scores from percentile ranks. IQ is hand calculated.

Statistics.--Test-retest reliability coefficients were obtained using a sample of 50 to 75 S's per grade level. Coefficients for K range from .42 (spelling) to .81 (reading recognition), with total test .82 and the median .74. SEM for K, range 1.66 (reading recognition) to 3.24 (spelling); total test, 6.50. Intercorrleations between subtests by grade levels and SEM for differences between subtests in grade levels are given. Rationale for item validity is given. Concurrent validity is evaluated with correlation coefficients between PIAT raw scores and PPVT IQ scores, range .42 (reading recognition) to .58 (general information).

Illinois Test of Psycholinguistic Abilities (ITPA) C5, C6, C8, P1, P4

University of Illinois

Sample.--The ITPA was standardized in 1960 using 700 children ages two and one-half years to nine years from the Decatur, Illinois Public School System.

Administration.--A trained test examiner is required to administer the ITPA to individuals. The child must respond orally, point to the correct response, or perform a motor task.

Content.--There are nine subtests grouped into two major areas, Representational Level and Automatic-Sequential Level. Within the Representational Level there are three categories of two tests each: decoding tests which include test 1, auditory decoding, and test 2, visual decoding; association tests which include test 3, auditory-vocal association, and test 4, visual-motor association; encoding tests which include test 5, vocal encoding, and test 6, motor encoding. The Automatic-Sequential Level consists of three tests in two categories. The automatic test is test 7, auditory-vocal automatic. The sequencing tests are test 8, auditory-vocal sequencing, and test 9, visual-motor sequencing. The visual-motor test and the auditory-vocal sequencing test are timed. Seven of the nine tests have a basal and a ceiling. Two of the tests must be given in their entirety, the motor encoding test and the vocal encoding test. Explicit instructions for administering and scoring are given.

Norms.--There are four tables of norms: language age for subtests, language age for total test, standard score margins for each subtest by age, and total score standard score norms by age. A difference of less than 1.00 between standard scores of subtests should not be considered reliable. Also, a difference of less than two years between language age scores may be attributable to test unreliability. In order to provide data to interpret an individual's score in a range rather than as a point, tables of SEM for standard scores and raw scores are provided.

Pictorial Test of Intelligence (PIT) C2, C4, C5, G7

Houghton Mifflin Company

Sample.--The PIT was standardized in 1962 using 260 to 347 S's at each age level of three to eight years. Total sample size was 1,830. The sample was stratified by five geographical regions, five categories of community size and six levels of father's occupation.

Administration.--The PIT is an individual test that can be administered by a teacher with some moderate training. The child is presented pictures that require pointing to the correct response. The test is not timed but requires about 45 minutes to administer. Explicit instructions are given.

Content.--There are six subtests: 1) picture vocabulary, 2) form discrimination, 3) information and comprehension, 4) similarities, 5) size and number, and 6) immediate recall. Explicit scoring instructions are given.

Norms.--Score conversion tables given include deviation IQ norms by age, mental age, mental ages for subtests, and percentile norms. These norms are for both a short form and for a long form (the short form is for ages three and four years).

Statistics.--Statistical tables are given for means and standard deviations by sex, geographic region, community size, and occupational level. A table of intercorrelations of subtests to total score if given by age, range .57 to .69. KR-20 reliability estimates for each age level and both the short and long form and each subtest. Test-retest reliability given by age, range .90 to .96. Rationale is given for content validity. Predictive validity is reported using data from a 1956 study. Criterion measures are Iowa Tests of Basic Skills (rho=.75), California Reading Achievement (rho=.82), Metropolitan Achievement Series (rho=.74). To the mean of four group intelligence tests--Detroit Primary, Kuhlmann-Anderson, Pintner-Cunningham, and SRA--(rho=.68), to the mean of Otis Quick Scoring (rho=.77). Concurrent validity was evaluated by comparing scores on the PIT with the Stanford-Binet, WISC, and CMMS.

Goodenough-Harris Drawing Test (GHDT) C4

Harcourt, Brace and World

Administration.--The GHDT can be administered in groups or individually. It is recommended, however, that the test be administered individually for preschool children.

Content.--The child is asked to make three pictures: a man, a woman, and the child himself.

Scoring.--Interpretation of the drawings for scoring is complex but is thoroughly explained using 73 requirements for the Man scale and 71 requirements for the Woman scale. Twenty to thirty drawings can be scored in an hour by an experienced person and about five drawings in an hour by a beginner.

Norms.--Tables are given for connecting raw scores to standard scores by age for drawing of a man by boys and girls and for drawing of a woman by boys and girls. Standard score equivalents for quality scale scores by age and sex are given, as well as percentile rank equivalents for standard scores.

Gates Reading Readiness Test (GRRT) C0, C1, C4, C8

Teachers College, Columbia University

Sample.--The GRRT was normed using K children as subjects.

Administration.--A classroom teacher can administer the test to a group of 10 to 15. The teacher reads a question and the child must either mark the correct choice or draw a connecting line. The test is not timed. Explicit instructions are read to the children and may not be repeated.

Content.--There are five subtests: 1) picture directions, 2) word matching, 3) word/card matching, 4) rhyming, and 5) reading letters and numbers.

Norms.--Tables are given for percentile ranks.

Statistics.--Split-half reliability with Spearman-Brown correction ranges from .78 to .96 for the subtests and .97 for the total test. Correlations with the Gates Primary Reading Tests, range .57 to .89, average .70.

Full Range Picture Vocabulary Test (FRVT) C0, C4

Psychological Test Specialists

Sample.--The FRVT used 589 S's ranging in MA from two and one-half to sixteen and one-half years for norming.

Administration.--A classroom teacher can administer the test to individuals. The teacher shows pictures of objects, the child tells what the objects are. There is no time limit for the test.

Norms.--Tables are given for percentile ranks and IQ equivalents.

Harrison-Stroud Reading Readiness Profiles (HSRRP) C0, C1, C2, C8

Houghton Mifflin Company

Sample.--The HSRRP was standardized in 1955 on 1400 first grade students.

Administration.--A classroom teacher can administer the test. Timing is not required. It is suggested that each subtest be given on successive days. This test is to be given after the child has had reading readiness experiences.

Content.--There are six subtests: five for groups of 10 to 15 children and one individual. The six subtests are: 1) using symbols, word to object; 2) making visual discrimination, attention span controlled (each item is done with E) and attention span uncontrolled (S proceeds through the section at his own pace)--the task is the identification of words from a group of words; 3) using the context (E reads a statement and S is to mark the item asked for); 4) auditory discrimination; 5) using context and auditory cues; and 6) giving names of letters (individual test).

Scoring.--Each score is plotted on a profile.

Lee-Clark Reading Readiness Test (LCRRT)

California Test Bureau

Sample. The LCRRT was standardized in 1931 using 159 K children.

Administration.--The test is usable with K and first grade. A classroom teacher can administer the test to groups of 10 to 15 children. The test is timed and requires a total of 15 minutes. The teacher reads the instructions and the child marks the correct response.

Content.--There are four subtests: 1) connect two letters that are the same, 2) identify the letter not the same as the others, 3) mark the object that E says, and 4) choose the word or letter out of a list that is the same as the stimulus word or letter.

Statistics.--Split-half reliability for K, .96; first grade, .87. The standard error of measurement for K, 2.2; first grade, 2.0. Correlations between LCRRT and Lee-Clark Reading Test (LCRT), range .42 to .56; between the LCRRT and California Achievement Test, .55. These data were obtained from a 1962 sample. The predictive validity for the total test score in these data is .56, while the same correlation on the 1931 sample was .67.

Sprigle School Readiness Screening Test (SSRST) C0, C2, C4, C6, C8, C9

Herbert A. Sprigle

Sample.--The SSRST was standardized in 1965 on 575 K and nursery school children ages four years six months to six years nine months. The sample was selected from four cities in the South, East, and Midwest. SES levels included were MSES, LMSES, and LSES.

Administration.--A teacher with moderate training can administer the test to individuals.

Content.--There are nine parts to the test: 1) verbal comprehension; 2) size relations (pictures of the objects are the same size but representations are those of various sized objects, e.g., telephone and car); 3) visual discrimination; 4) reasoning, 5) understanding of numbers (counting); 6) information, 7) analysis; 8) vocabulary, and 9) spatial relations. Instructions and scoring are explicit. The first four parts require pointing responses to visual stimuli; the last five require verbal or motioning responses.

Norms.--Tables are given for conversion of raw scores to IQ for all age levels. There is also descriptive material for each age level by points scored.

Statistics.--Validity is established by correlating several measures to the SSRST. The Stanford-Binet by age levels, range .95 to .96; Metropolitan Readiness test ages five years to six years nine months, range .83 to .90; Gates Reading test administered at the end of first grade to ages five years to six years nine months, range .78 to .92. Test-retest reliability, .96 (N=30).

Preschool Language Scale (PLS) C1, C2, C5, C6, C9, P7

Charles E. Merrill Publishing Company

Administration.--The PLS begins with age one year six months and goes sequentially by six month intervals to seven years. A teacher with moderate training can administer the test to individuals. The teacher shows pictures and asks for responses. The child must either point or speak. The teacher begins at an age level where the child can answer all items correctly, then continues sequentially through age levels until the child misses all items in one age level.

Content.--The test has three basic parts: 1) auditory comprehension, 2) verbal ability and 3) articulation. A picture book published for the PLS is used, plus some readily available materials such as coins, colored blocks, sandpaper, and a clock.

Scoring.--Scoring is based on the use of words during the interview and the correct responses to items.

Norms.--Formulas are given for converting scores to a language quotient.

Statistics.--Each item is supported by a statement of rationale and references.

Test of Verbal Maturity (TVM) C1, C2, C3, C5

Baltimore City Public Schools

Administration.--The TVM is used as an instructional adjunct in the Baltimore City Public Schools. It is administerable by teachers to individual children. The child answers questions asked by the teacher.

Content.--There are 60 items in seven conversational blocks: A) Let's talk about you; B) Let's talk about some of the things you do; C) Let's talk about some of the animals you might know; D) Let's talk about some of the things you might use; E) Let's talk about some of the people you know; F) Let's talk about some of the colors you know; G) Let's talk about some of the other things you know.

Scoring.--Each item is scored either 2, 1, or 0, depending on the quality of the response.

Norms.--Norms are given for culturally disadvantaged K sample.

Statistics.--Raw scores in ranges of above average, average, low average, low and very low are given for both the TVM and the Columbia Mental Maturity Scale.

Pre-Kindergarten Goal Card (PKGC) C2, C3, C5, C6, C8, A10, P0, P1, P4, P6

Cincinnati Public Schools

Administration.--The PKGC is a teacher administered scale. The individual child performs motor tasks, arranges points, responds orally.

Content.--There are two parts: I, Tested Qualities, and II, Observed Qualities. Part I has 11 subparts: A) physical coordination, B) relationship to people and things, C) auditory discrimination, D) concepts of size, E) concepts of color, F) visual discrimination (takes puzzle apart and puts it together), G) concept of weight, H) arithmetic skills, I) concepts of location and space, J) visual discrimination (shapes), and K) listening skills. Part II has six subparts: 1) mental awareness, 2) language ability, 3) social awareness, 4) health habits, 5) creative abilities, and 6) motor coordination.

Scoring.--Subpart A of Part I is rated on a three point scale; subparts B through K are scored right or wrong. Each of the six subparts in Part II is rated on a five point scale.

Assessment Program of Early Learning Levels (APELL) C2, C5, C8

Edcodyne Corporation

Sample.--Five thousand experimental tests were used for the development of this test. Students used were from all SES levels of urban areas. There were 15 percent Negro, 23 percent Spanish surname, and 7 percent Oriental, American Indian, and other non-whites.

Administration.--Two sittings of 20 minutes each are required, although there is no time limit. One test item is presented on a page. The child fills in the square that appears beneath the stimulus picture of his choice. The square is on a machine scorable computer card. When all testing is done, the set of cards is sent to Edcodyne for scoring.

Content.--The APELL is a machine scored instrument only, used to evaluate three skill areas: pre-reading--visual discrimination (similarities and differences), auditory association (beginning sounds, word beginnings), and letter names; pre-math--discrimination of attributes (position, size, quantity, shape), number concepts (counting, number identification, set relationships), and number facts (addition, subtraction); and finally language--nouns, pronouns, verbs, adjectives, plurals, prepositions.

Scoring.--Test results are reported in the form of Pupil Score Listing, Power Listing, Frequency Distribution and Student Profile.

Statistics.--Test-retest reliability, two weeks between testings, $r = .81$ (N=85). Correlation between APELL and Metropolitan Reading Readiness Test, .78 (N=104).

Expressive Vocabulary Inventory (EVI) C5

(Stern, no date)

Sample.--The sample consisted of 430 children ranging in age from 36 to 71 months. There were 104 boys and 256 girls; 145 Anglo and 285 Negro children; 300 from low and 130 from high SES families.

Content.--The EVI is an individually administered test with six categories: 1) nouns, 2) verbs, 3) prepositions, 4) adjectives, 5) adverbs, and 6) pronouns. The child is shown a picture and asked a question, "What is this?" The child must say the key word--no others are accepted, i.e., all other words are ignored.

Norms.--Tables are given showing means and standard deviations by sex, race, and SES, and percentile distributions of scores by age.

Statistics.--Reliability using KR-20, .88 (N=192). Correlations of EVI scores with age, .08; with the Goodenough Draw-a-Man test, .30; with the Peabody Picture Vocabulary Test, .55; with the Children's Auditory Discrimination Inventory, .36; with the Echoic Responding Inventory for Children, .67; and with the Parallel Sentence Production Test, .24.

Echoic Response Inventory for Children (ERIC) C5

(Stern, 1969b)

Sample.--A group of 450 urban threes, fours, and fives were tested with 254 receiving form A and 196 form B. There were 216 boys and 234 girls; 149 Anglo and 301 Negro; 333 from LSES and 117 from MSES.

Administration.--The ERIC is an individually administered test with two alternate forms, A and B. The child listens to a tape recording of phrases and is asked to repeat what he hears, one sentence at a time.

Content.--There are 20 sentences. The 20 items on each form progress from very simple to complex sentences.

Statistics.--Correlations between ERIC and Goodenough Draw-a-Man Test, .35; ERIC and PPVT, .51; ERIC and CADI, .34; ERIC and EVI, .67. All are significant at the .01 level. In addition, the following tables are presented: Means and Standard Deviations on combined forms by age, SES, race, and sex; Analysis of Variance by age, race, SES, and sex; Means and Standard Deviations by age, sex, race, SES, for the DAM and PPVT; and percentile scores by age.

Parallel Sentence Production Test (PSPT) C5

(Stern, 1968)

Administration.--The PSPT is a 20 item test of sentence production. Each card has two pictures. E says a sentence about the picture on the

right and the child is to produce a parallel sentence for the picture on the left. There are two sample items. If the child cannot perform the task with two or three attempts he is not given the test. In some cases, a second visit may be fruitful.

Scoring.--Certain word substitutions are allowable, i.e., "outside" for "outdoors." E marks down any deviations from the expected response. One point is given for each complete sentence, and one point is given for each word identical to the one on the answer sheet. No points are given for "a" or for insertions or additions.

Children's Auditory Discrimination Inventory (CADI) C8

(Stern, 1969a)

Sample.--There were 476 three-, four- and five-year-old children tested, with 234 receiving Form I and 242 Form II. There were 215 boys and 261 girls, 158 Anglo and 318 Negro children, 124 from MSES and 352 from LSES.

Content.--The CADI consists of 38 word pairs and 38 cards with two pictures on each card. One word is a nonsense word paired with a nonsense picture. The second word is a real word paired with a real picture. There are two forms. Form I asks for the first member of a pair and Form II asks for the second member of a pair. E names both pictures, always naming the real word and pointing to the real picture first. The child is then asked to point to one picture.

Statistics.--Internal reliability (K-R 20) of the two forms is .71 for Form I and .74 for Form II (N=153). The inter-form reliability, .87 (N=153) (Spearman-Brown Corrected). Item-Pair difficulty levels are given as well as means and standard deviations by age, SES, race, and sex. Analysis of variance for age by race, SES and by sex and percentile ranks are given for both forms. Correlations between the CADI and Draw-a-Man, .21; CADI and PPVT, .27; CADI and EVI, .36; CADI and ERIC, .34. All are significant at the .05 level.

Visual Discrimination Inventory (VDI) C2,C8

(Stern and Lombard, 1967)

Sample.--There were 291 three, four and five year olds tested. There were 139 boys, 152 girls. The sample included 199 Negroes and 92 Anglos from HSES and LSES.

Content.--The VDI consists of four subtests: figure ground, form constancy, closure, and position-in-space. A model and three alternatives are presented. The child is asked to select one of the three alternatives that is most like the model. Three alternate forms are used to correct for position bias.

Statistics.--Intra-form reliability (Horst's revision of KR-20), range

.90 to .92. Inter-form reliability, .88. Correlations between the VDI and the Draw-a-Man and the PPVT and the VDI by race and SES are given. Analysis of variance is given for race by sex and by age. A table of means and standard deviations is presented across race, age, sex, and SES.

Motor Steadiness Battery for Children (MSBC) PO

(*Knights and Moule, 1968)

Sample.--There were 224 children ages five through 14 tested. The sample included 184 normal children and 40 suspected neurologically disfunctioning children.

Content.--The MSBC consists of three tests: 1) Maze Test (run a stylus through a maze), 2) Graduated Holes Test (S places a stylus in a series of holes gradually diminishing in size without touching the sides of the holes), and 3) Grooved Pegboard Test (S must fit shaped pegs into holes).

Statistics.--Intra-test coefficients are low, suggesting that different abilities are being measured. Separate data are given for LSES and HSES. Means and standard deviations are given by age. Subtest correlations are also given. Although scores are not related to social class, style of responding seems to be. LSES children are less careful and more rapid than HSES.

The Mother-Child Relationship Evaluation (MCRE) A4

Western Psychological Services

Administration.--The MCRE is a rating scale administered to mothers. No special training is required to administer the scale, although interpretation requires a trained specialist. Total time required is 30 minutes. Explicit instructions are given for administration and scoring.

Content.--This is a five point rating scale going from "strongly agree" to "strongly disagree." There are five subscales: 1)Acceptance, 2) Overprotection, 3) Overindulgence, 4) Rejection, and 5) Compulsion-Dominance.

Scoring.--The circled numbers are summed across all items within each subscale.to obtain the raw score. Alongside each item is an identification as to which subscale the item belongs. The Compulsion-Dominance score is obtained by adding the number of attitude scales which place in the highest quartile in which any score appears.

Norms.--Percentile norms are given for the first four scales. Compulsion-Dominance is graded C+, C-, D-, or D+. Interpretation examples are given by citing clinical cases.

Statistics.--Split-half reliability coefficients for each subscale, range .41 to .57. Intercorrelations between Acceptance and non-acceptance

scales are used for construct validity. The mean correlation coefficient is -.55. The coefficient between Acceptance and Rejection, -.45.

Riley Preschool Developmental Screening Inventory (RPDSI) C8, P4

Western Psychological Services

Administration.--The RPDSI can be administered by a classroom teacher to individuals, small groups, or the entire classroom. The age range is from three to seven years.

Content.--There are two parts to the test, Designs and Make a Boy (Girl). The child must copy the designs and draw a picture of a boy (if he is a a boy) or a girl (if the child is a girl).

Scoring.--Sample drawings are given for comparison for the Make a Boy (Girl) test. For the Designs the response is rated either Refuse, Scribble, Perseverate, or Incomplete.

Norms.--A table of developmental age to number of checkmarks is given.

Ayres Space Test (AST) C8, P4

Western Psychological Services

Sample.--The AST was normed on 30 children ages three to ten years. There were 15 males and 15 females. The sample was selected from the Los Angeles City School System and stratified by geographic area, SES, private schools, and camps.

Administration.--Although no training is required to administer the AST, a specialist is required to evaluate the results. E places blocks in their proper place on a form board. Above the two blocks there is a place to put one of the lower blocks. At a signal from E, S moves one of the blocks or indicates in some way which of the lower blocs will fit in the upper space. The time required to make the decision is recorded, regardless of whether the decision is right or wrong.

Content.--The AST has only one scale, which basically measures visual perception.

Scoring.--There are three scores: Accuracy Score or Raw Score (the total correct choices), Time Score (total number of seconds required to make a decision), and Adjusted Score (Accuracy Score minus Time Score, according to a schedule given in the manual).

Norms.--Tables of mean scores by age and of standard scores by age are given.

Statistics.--Estimates of reliability are given by age level using the Rulon formula. Coefficients range from .86 to .96 for total test, .83 to .93 for adjusted scores. SCM is also given, range 1.90 to 2.53 for total test, range 2.22 to 2.62 for adjusted scores. Factor analysis

results in identifying seven factors. They are, however, not sharply defined. The factors are 1) Function of Difficulty Level, 2) Function of Configuration Type, 3) Directionality Factor, 4) Egg Block Factor (shape of one block), 5) Diamond Block Factor (shape of the other block), 6) Leftness Factor, and 7) Visualized Rotation.

Arizona Articulation Proficiency Scale (AAPS) P7

Western Psychological Services

Sample.--The AAPS was standardized using 7,000 children from four public school systems in two states and a variety of preschools. The children's mental ages ranged from two to 14 years. The revised age norms were determined from a sample of 702 children from the Seattle School System. Classes were randomly selected from 15 elementary schools. Sixteen preschools were also used. There were at least 25 boys and 25 girls in each half-year range from three years zero months to five years six months; thereafter, at least 25 boys and 25 girls were tested for each year to 11 years 11 months.

Administration.--The AAPS should be administered by a speech clinician but someone with some moderate training could administer the test. In the first part of the test the child is shown some pictures and is to respond to questions asked by E. In the second part of the test E reads a sentence and asks the child to repeat it.

Content.--There are two parts to the test. Part I is the Picture Test. There are 48 picture cards that the child is to respond to. Part II is the Sentence Test. There are 25 sentences that the child is either to repeat after E or to read aloud.

Scoring.--Only errors are recorded. There are separate evaluations for vowels and consonants. The type of error is recorded as omission or distortion. Each item is assigned a value score. The value scores are summed for each item for which there is an error. Total consonant scores are added to the total vowel scores to obtain the total sound score. The total sound score is then subtracted from 100.0 to obtain the total score, which represents the percentage of the individual's articulation which is correct.

Norms.--There is a table for interpreting articulation proficiency and a table of average scores for each age level. There is also a formula for determining the percentage of articulation improvement. The age norms, given in the protocol booklet for each item, are not average ages for sound development. They are the ages by which 90 percent of the children had mastered each sound. Therefore, if a child has not developed a sound by the age designated, that sound would be considered defective.

Statistics.--Test-retest reliability coefficient with a one-week interval, .96 (N=105). Ten judges rated the speech of 45 children from tape recorded samples on a 1 to 9 continuum. These ratings were correlated with scores from the AAPS to obtain a correlation coefficient of .92.

California Preschool Social Competency Scale (CPSCS) A15

Consulting Psychologists Press, Incorporated

Sample.--The norming sample approximates the proportion of preschool children, two years six months to five years six months, in the major urban centers for each geographic region of the United States. The proportions were determined by the U.S. Census report. A total of 800 children were rated. The children were stratified by age, sex, and high and low occupational level.

Administration.--The teacher rates the child on specific observed behaviors.

Content.--There are 30 items, each with four levels of competence.

Scoring.--The competency level (one to four) for each item is added to the levels of the rest of the items to obtain a total score. The total score is used to enter a table to determine the percentile rank.

Norms.--Tables of percentile norms are given for two age levels by occupational level, sex, and total.

Statistics.--Mean and standard deviations for CA by sex and occupational level are given. Odd-even reliability coefficients for three samples, range .90 to .98 (Spearman-Brown correction). Children's ratings from three different samples in Texas (N=24), Minnesota (N=15) and California (N=71) were correlated, range .75 to .86. A table of item correlations to total score by sex and occupational level is given.

The Houston Test for Language Development: Part II (HTLD) C5

Margaret Crabtree

Sample.--The HTLD was normed on 102 children from the Houston, Texas Public School System. The children were between the ages of two years six months and six years five months.

Administration.--A teacher with moderate training can administer the HTLD to individuals. E gives directions for S to follow. Some items require manipulatives. The time required to complete the test is about 30 minutes.

Content.--There are 18 items. Each item has a varying number of required responses. Some items require interpretation of sentence use or syntax on the part of E by listening to a story told by S.

Scoring.--Each item has a score for each age level, three to six years. The score for each age is obtained by counting the failures and subtracting them from the possible score for that age. The sum of the scores for each age level is the Language Age. The Basal Age is the lowest age at which all items were passed. The Upper Age is the highest age at which any item was passed.

Norms.--Tables are given showing the percent of children passing items at each age level. The criteria for the item norms at each age level were determined by 1) a significant difference in the percent of children passing from one age to the next, 2) over 50 percent of the age level passing, and 3) judgment (fewer than 50 percent of the age level passed the items at the next level of difficulty).

Series of Emergency Scales (SES) CO

The Psychological Corporation

Sample.--The SES was standardized in 1944 (Scale A, age five through seven) using 310 K and first graders. The testing was divided into four age levels: five years, five years six months, six years, and six years six months. There were 53 children at the five year level and over 80 children at each of the other three levels.

Administration.--A classroom teacher can administer the SES to individual children. E reads a question and S answers it.

Content.--There are four overlapping scales. Scale A has 25 items and is for children ages five to seven. Scale B has 30 items and is for children ages six to eight. Scale C has 27 items and is for children ages seven to ten, and Scale D has 10 items and is for children ages nine to 14 plus. The items in Scale A are related to concepts of size, color, rate of speed, and temporal sequence. Examples: "Which is larger ...?" "What color is a...?", "Which goes faster...?" This test is intended to be a preliminary measure to determine which children need further psychometric testing.

Scoring.--Each item is weighted. The weighting was derived from an initial sample of 100 children. The value of an item is an inverse ratio to the percentage of correct responses received. For Scale A those items on which 67 children responded correctly were assigned a value of one point; 33 children, two points; less than 33 children, three points. The weighted value of all items answered correctly by the child are summed for a total score.

Norms.--Tables of norms for the four scales are given as ranges by age level. These tables are based upon slightly smoothed age curves.

Statistics.--A table of median scores and ranges of scores for the four scales are given by age.

Test of Auditory Discrimination (TAD) CO, C8

American Guidance Service Incorporated

Sample.--The TAD was standardized in 1969 using 745 S's ages three to 84. The sample size for ages three years five months to six years six months was 246. The sample was drawn from Minnesota, New Jersey, and Tennessee. K's were drawn from public and private schools. Preschool children were obtained through personal contact by individual examiners.

Administration.--A teacher can administer the TAD to individual children. A good quality tape recorder that can accomodate five inch reels must be used. It is also preferable to use earphones for the subject. The first phase of the testing requires that a training session be employed to acquaint the child with the stimulus materials and the names to be associated with each picture. When the training procedures are completed, the testing may begin. The testing procedure requires seven and one-half minutes. The initial instructions are read to the child by E. All subsequent instructions are on the tape recording. E's task is merely to turn the picture plates at the proper moment. The child is to point to the object named on the tape.

Content.--There are two subtests: the Quiet Subtest, which has 30 picture plates with a quiet background, and the Noise Subtest, which has 30 picture plates but uses a tape with background noise.

Scoring.--There are two levels of scoring: 1) number of errors in each subtest, and 2) total error scores on voiced sounds, unvoiced sounds, plosives, continuants, and nasals. The number two level should only be used for research or clinical exploration. Explicit instructions are given for both scoring levels.

Norms.--Tables are given for percentile scores to the midpoint of each raw score interval, T-scores to the midpoint of each raw score interval, and percentile scores to the upper limit of score intervals.

Statistics.--Internal consistency reliabilities are given for a composite clinical sample as well as for the standardization sample. Correlation coefficients for ages three to six, range .61 to .86. Test-retest correlation for the Quiet Subtest (two-week interval), .87; for the Noise Subtest, .81 (N=17). Rationale for selection of items and the task is used for evidence of content validity. Evidence for concurrent validity is a comparison of scores for the TAD with the judgments of expert clinicians. Correlation coefficients obtained between clinicians and T-scores on the Quiet Subtest, .68; between clinicians and T-scores on the Noise Subtest, .72 (N=18). Correlation coefficients were also obtained between clinicians' judgments and error scores on the Quiet Subtest and Noise Subtest for several age levels in the clinical and general population samples. Evidence of construct validity is presented in three forms: 1) an expected developmental trait is observed--mean error scores decrease until subjects are in their twenties, then scores remain rather stable until about 40 years of age, when there is a gradual increase in error scores; 2) the relative performance of clinical S's with the general population is as expected; 3) the correlations between the TAD and non-measures of auditory discrimination (letter recognition, Primary Mental Abilities; mental age, auditory blending, and memory for related syllables from the Detroit Tests of Learning Aptitude) are low, range .20 to .51 (N=122).

Quick Test (QT) C4

Psychological Test Specialists

Sample.--The QT was standardized on 458 children and adults. The sample was stratified by age, sex, educational level and own or father's occupation.

Administration.--E shows line drawings to S and asks which of the four drawings best illustrates the meaning of a given word. The child is only required to point. Moderate training is needed to administer the test. Time required is three to ten minutes.

Content.--There are three plates with four line drawings on each plate. One plate is used for one of three 50 item forms.

Scoring.--When the child has passed six consecutive and failed six consecutive items, testing is discontinued. A record sheet lists each item, the correct answer, and the difficulty level of the items.

Norms.--Norms are given for each of the three forms as well as possible combinations of the three forms. Tables are presented for MA, IQ, and percentiles.

Statistics.--Interform reliability is .78; predicted two-form, .87; predicted three-form, .92 (N=69 preschool children). For kindergarten children the interform reliability is .73; predicted two-form, .85; predicted three-form, .89 (N=65). Validity is established by comparison of the QT with the FRPV. Correlation of the QT and the FRPV (forms A and B combined) for preschool children is as follows: Form 1, .76; Form 2, .77; Form 3, .62; Forms 1 and 2 and 3, .79 (N=40). Cross-validation shows no sex differences in item difficulty.

Stycar Hearing Tests (SHT) C8, P7

NFER Publishing Company

Administration.--The SHT can be administered by someone with some moderate training. For three and four year olds E places toys in front of the child. The child is then asked to name the objects. E then says the name of the toys and asks the child to point to them. E then retreats to a distance of ten feet, covers his mouth, and repeats the list in the same order. E can then repeat the test in a whisper at ten feet. Another test requires the child to take a cube from a box and put it on a table every time E says a sound, i.e., sh, t, s, p, f, th, etc. E then moves ten feet away and repeats the test. For five to seven year olds the administration is essentially the same but the items used are picture vocabularies, selected word lists, and sentences.

Content.--The SHT is used to test children aged six months to seven years. The tests used for three to four year olds are 1) The Seven Toy Test, which consists of seven objects--a spoon, fork and knife, doll, car, plane and ship; 2) The Second Cube Test, which consists of eight colored

cubes; 3) The Six "High Frequency" Pictures Test (used also for the five- to seven-year-old child). The five to seven year olds are given The Third Cube Test. This consists of eight colored cubes and a card decorated with 12 colored squares. The child must place a cube on its own color when he hears a sound. The rest of the test for this age level proceeds as indicated above but pictures, word lists and sentences are used as stimuli.

Scoring.--At the end of each procedural section there is a narrative describing the child's speech as it should be for his age level.

The Holborn Vocabulary Test for Young Children (HVTYC) CO

George G. Harrup and Company, Ltd.

Administration.--The HVTYC can be administered by a classroom teacher to individual children. E reads a statement and asks the child to tell him what he is touching or what is described.

Content.--There are 100 items. Items one to 50 deal with what is actually visible to the child while items 51 to 100 deal with what is described to the child.

Norms.--A graph is presented showing the percentage of correct answers by age in half years beginning at age four and one-half to age eight and one-half. Estimated vocabulary is also given by age.

The Arthur Adaptation of the Leiter International Performance Scale (AALIPS) CO, C2, C8, P1, P4

C. H. Stoelting Company

Sample.--The AALIPS was standardized using 289 children ages three to eight. The children were from a "middle class" group based on occupational classification. Most of the cases were in the skilled and semi-skilled labor group.

Administration.--A specialist is required for administration. It is essential that a good rapport be established between E and the child. It is suggested that the child and his parent both be present when E is gathering general information about the child. During the testing the child should be free to go and see his parent (if he or she is waiting) if he chooses to do so. The test materials are placed in front of the child. E demonstrates the task to the child. The child is then to perform the task himself. E is not permitted to give verbal instructions. E begins two years below the CA of the child and proceeds until the child fails to complete a test correctly.

Content.--All tests consist of a wooden frame, pattern strips to fit on the frame, and one-inch cubes for the child to match to the patterns. There are four tests for age three (III-1, III-2, III-3, III-4), four tests for age four (IV-1, IV-2, IV-3, IV-4), and four tests for age five (V-1, V-2, V-3, V-4). III-1 is a form matching task; III-2, color block design task; III-3, picture completion task; and III-4, number discrimination. IV-1 is a form and color matching task; IV-2, a form matching task; IV-3,

a counting task; and IV-4, a form, color, and number task. V-1 is a genus matching task; V-2, a two-color circle matching task; V-3, a picture matching task; and V-4, a color block design task.

Scoring.--Each test is scored pass-fail for the age level of the test. The age level of the tests is MA and goes from two years six months to nine years three months.

Stanford-Binet Intelligence Scale (S-BIS) C4

Houghton-Mifflin Company

Sample.--The total number of subjects used for standardization and test revision in 1960 was 5,716. The ages used were two and one half to fifteen. The preschool subjects were drawn from California, Minnesota, Iowa, and New York. The sample was stratified by fathers' occupation using the 1950 census.

Administration.--The procedures for administration are given explicitly. Stress is given to establishing rapport with the child, strict adherence to the standardized procedure, and skill in manipulating the test material. This suggests that a person with specialized training should administer the test. The testing is begun where the child is likely to succeed--generally one age level below CA. The test is given to individuals and requires from 100 minutes for young children to 90 minutes for older children. A short version of the test may be administered by using only items with asterisks. Separate testing techniques are discussed for preschool children.

Content.--There are six tests for each age level by half years from age two to fourteen and adult. An alternate test for each age level is offered in the event that a test is spoiled. The general content areas for children age three to five are copying, drawing, comparisons, vocabulary, picture completion, similarities and differences, memory, discrimination, and various psycho-motor tasks.

Scoring.--Scoring is extremely critical since it requires exact interpretation of the child's responses. The number of possible points for each item is given as well as a scoring standard to aid in the interpretation of responses. The MA must be calculated by hand according to a formula given. Tables are presented for conversion of MA/CA to IQ.

Gesell Developmental Schedules (GDS) P0, P4, P6, P7

The Psychological Corporation

Administration.--The administration of the GDS must be adapted to each child. Each administration must be adjusted to the maturity differences of children of different ages. The order of items may be changed if the administrator feels it is necessary.

Content.--There are five broad age periods each comprising two age zones. There is a schedule for each age zone containing four behavior categories--motor, adaptive, language, and personal-social. The schedules encompassing preschool children are: G (2 year zone), H (3 year zone), I (4 year zone), and J (5 year zone). A list of materials needed is provided and may be ordered individually or by the complete set. Some of the materials required are from the S-BIS and are listed. They are not supplied by the Psychological Corporation. Also, the Goddard Formboard is required but not furnished. Certain other materials, e.g., movable stairs and walking boards, will be constructed on special order or working drawings can be supplied.

Scoring.--In order to score the schedules there is a great emphasis on experience and familiarity with the literature. The scores are reported as maturity levels for the four behavioral categories.

Gumpgookies A31

(Adkins and Ballif, no date)

Sample.--The test was administered to 1,607 preschool children in 10 ethnic-cultural samples in the United States. In Hawaii, 668 children in the first, second, and fourth grades were also tested.

Administration.--The test is administered individually to preschool children and in groups to elementary school children. There are two group forms, one for non-reading elementary school children and one for elementary school children who can read. E shows S two imaginary figures called "gumpgookies" and describe them. The child chooses the one he identifies with. For example,

"These gumpgookies are drawing circles.
This one is drawing a lot.
This one is getting them right.
Which is yours?"

Content.--There are 75 items in the individual forms, 100 items for non-reading elementary school children and 100 items for elementary school children who can read. The test is based on five components of motivation to achieve: (1) affective, expressed as positive affect from achievement; (2) conceptual, whereby the individual sees himself as an achiever; (3) purposive, enabling the individual to establish and respond to future goals; (4) cognitive, by means of which the instrumental steps necessary to achieve are known; (5) ethical, through which the individual can evaluate his own performance. Factor analysis of the combined elementary school children identified five factors which parallel the postulated components: (1) self-confidence, a conceptual response; (2) work enjoyment, an affective response; (3) instrumental activity, a cognitive response; (4) responsiveness to future goals, a purposive response; and (5) self-evaluation, an ethical response. Factor analysis using the 1,607 preschool children group yielded five tentative factors: general constructive activity, self-evaluation, optimistic self-confidence, persistence, and work enjoyment.

Statistics.--KR-20 reliability estimates range from the low .80's to the low .90's. Gumpgookies correlates from .20 to .35 with IQ for homogeneous age groups. Correlation between gumpgookies and the Preschool Inventory, using four-year-olds, is .31. Correlations with teacher rankings are positive, with about half significantly different from zero.

The Cincinnati Autonomy Test Battery (CATB) A10

(Banta, T. J., 1970)

Sample.--The CATB was administered to over 300 children from the Cincinnati area. Both lower class and upper class were included.

Administration.--The CATB is an individually administered test that requires approximately one hour administration time. A skilled examiner is necessary in that there are complicated manipulations of test materials, a scoring system that must be thoroughly mastered, and the ability to sustain the attention of the child. Complete description of administration procedures, scoring, and rationale is given for each test.

Content.--There are 11 tests in this battery yielding 14 scores. The tests and variables yielded are as follows:

Curiosity: Task Initiation--child is to self initiate play with objects.

Curiosity: Curiosity Box Test--child is to play with box after being invited to do so by the examiner.

Innovative Behavior: Dog and Bone Test--a game inviting the child to get the dog to his bone by various routes.

Reflectivity-Impulsivity: The Early Childhood Matching Familiar Figures Test (EC-MFF)--the child matches a familiar figure with its counterpart embedded in other figures--example, a photograph of a face to a face embedded in an array of other faces. There are also geometric objects to match.

Field Independence: The Early Childhood Embedded Figures Test (EC-EFT)--the child is to identify an embedded cone in fourteen test pictures.

Incidental and Intentional Learning: Find-the-Green-Color Test--the child first identifies all things that were green in the test booklet. He then is asked to free recall the green things he saw (after a brief training period).

Persistence and Resistance to Distraction: The Replacement Puzzle Test--the child must assemble a puzzle with the existing environment as the only distractor. Then distractors are placed in the puzzle by the examiner. The child's persistence is then measured again.

Task Competence--posttest ratings on a 1 to 5 scale.

Social Competence--posttest ratings on a 1 to 5 scale.

Kindergarten Prognosis--posttest ratings on a 1 to 5 scale.

Curiosity Verbalization--an analysis of the child's verbalizations in the Curiosity Box Test.

Fantasy-Related Verbalizations--an analysis of the child's verbalizations relating to symbols and wish fulfillment.

Scoring.--The interpretation of the children's responses requires a thorough background in the variables being mentioned as well as the scoring system used. The difficulty in scoring the tests can only be overcome by training and experience. The score values are, however, clearly outlined and thoroughly discussed.

Statistics.--Most reliability estimates are based on lower class Negro children's responses (N=33 to 34). Test-retest coefficients ranged from -.07 to .82. Internal consistency coefficients ranged from .16 to .94. Inter-rater reliability coefficients ranged from .90 to .99. Test intercorrelations consisted of two samples of lower class Negro children (N=84). Forty-three percent of the 66 correlations were significant beyond the .05 level.

Merrill-Palmer Scale of Mental Tests (M-PSMT) C4, C5, P0, P4

World Book Co. (complete manual)
C. H. Stoelting (materials)

Sample.--The M-PSMT was standardized in 1931 using 631 children largely from the Detroit area. There were 300 boys and 331 girls. The age range was 18 to 77 months. The sources from which the children were obtained were: the Merrill-Palmer Institute, public schools, private schools, child care agencies, and health clinics.

Administration.--The administrator must be able to sustain the child's interest, adapt himself to the conditions of the test situation as determined by the child's behavior, and he must be able to determine when to discontinue testing for reasons of fatigue, resistance or lack of interest. The tests must be timed with a stop watch. Care must be taken that the timing begin when the child touches the test material with the obvious intention of carrying out the examiner's request. Testing should begin at the age group in which the child's CA falls. It is not necessary to give the tests, within an age group, in the order that they appear.

Content.--There are four types of tests: (1) Language Tests--Action Agent Test, Simple Questions Test, Repetition of Words and Word Groups; (2) All-or-None Tests--Obeying Simple Commands, Throwing a Ball, Straight Tower, Crossing Feet, Standing on One Foot, Folding Paper, Making a Block Walk, Drawing up String, Identification of Self in Mirror, Cutting with Scissors, Matching Colors, Closing Fist and Moving Thumb, Opposition of Thumb and Fingers, Copying a Circle, Copying a Cross, Copying a Star; (3) Form Boards and Picture Tests--Seguin Form Board, Mare and Foal Picture Completion, Manikin, Picture Puzzle No. 1, Picture Puzzle No. 2, Picture Puzzle No. 3, Decroly Matching Game; and (4) other tests of Motor Coordination--Wallin Peg Boards, Fitting Sixteen Cubes in a Box, Nest of Cubes, Buttons and Buttonholes, Little Pink Tower, Three-Cube Pyramid, Six-Cube Pyramid. "Rating of Personality Traits in Mental Test Situations" is presented as a possible means to record observations made during testing. A discussion of the traits is given. Illustrative case studies are also given.

Scoring.--Explicit scoring instructions are given after each test along with comparison standards. There are a total of 93 items scored either plus (+) for success, minus (-) for failure, O for omitted, or R for refused. If the child's score is equal to or greater than the score value for his age level a plus is given at that level. If his score does not reach the score value for his age level, the test is marked minus. One point is given for each test passed. There is a correction for omissions and refusals. The formula is given for the final corrected score.

Norms.--Tables are given for MA: a ranking of very inferior to very superior (defined by standard deviations) by CA and score values, MA values, and IQ; and percentile rankings by score values.

Statistics.--Percentages are given to show the number of children of each age level passing the separate test elements, showing relatively small overlapping of scores between the various age groups, the M-PSMT was correlated with the S-BIS, r=.79. Total scores show a correlation of .92 with CA.

Bayley Scales of Infant Development (BSID) C2, C7, C8, C9, A39, A40, P0

The Psychological Corporation

Sample.--The BSID was standardized on data collected from 1960 to 1968. A total of 1,262 children age 2 to 30 months comprised the sample. The sample is described by sex, color (white, non-white), urban-rural residence, educational attainment of head of household, geographic region, and birth order.

Administration.--The examiner must be completely familiar with the directions for presenting and scoring the test items. The most important factor, however, is that the examiner must be able to interact effectively with infants. Establishing rapport is crucial. The mother or mother substitute must be present during testing. The mother may be invited to present test items if the examiner feels that the child would respond better to her, for example, if the child is anxious or fussy. The order of the test items may be adapted to the responsiveness to the child. Total testing time is 45 to 75 minutes.

Content.--There are three scales: (1) the Mental Scale--designed to assess sensory-perceptual acuities, discriminations, memory, learning, problem-solving ability, vocalizations, early evidence of ability to form generalizations and classifications; (2) the Motor Scale--control of the body, large muscles, and finer manipulatory use of hands and fingers; (3) the Infant Behavior Record (IBR)--used to assess environmental orientation through attitudes, interests, emotions, energy, activity, and tendencies to approach or withdraw from stimulation. The results of the Mental Scale is expressed as a Mental Development Index (MDI). The Motor Scale is also expressed as a Psychomotor Development Index (PDI).

Scoring.--Explicit scoring instructions are given after each item, but judgmental decisions are required on the part of E. The items are scored P (pass), F (fail), O (omit), R (refused) or RPT (reported by the mother, if the mother reported that the child was capable of performance but response could not be elicited in the test). Basal and ceiling levels are obtained. Usually ten items passed and failed successively establish the basal level and ceiling. The raw score is the total number of items passed by the child. The IBR is a series of rating scales completed after the child completes the Mental and Motor Scales.

Norms.--The MDI and PDI are obtained by using tables provided and are expressed in standard scores having the same numerical characteristics as the "Deviation IQ".

Statistics.--Split-half correlations for the Mental Scale by age range from .81 to .93; for the Motor Scale the range is .68 to .92. The SEM for the Mental Scale by age range from 4.2 to 6.9; for the Motor Scale the range is 4.6 to 9.0. Correlations between the Mental and Motor Scales by age range from .24 to .78.

Developmental Test of Visual-Motor Integration (VMI) P4

Follett Educational Corporation

Administration.--The VMI may be administered to children ages 2 to 15 years. Separate sets of instructions are given for group and individual administration. The classroom teacher can administer the test, but some familiarity with scoring would be necessary.

Content.--There are 24 geometric forms that the child is to copy. The forms are arranged in order of difficulty. Assessment of five levels of performance and remediation for difficulties is discussed. The five performance levels are: (1) motor proficiency, (2) tactual-kinesthetic sense, (3) tracing, (4) visual perception, and (5) visual-motor integration.

Scoring.--A complete set of scoring criteria, graded either pass or fail, is given. The teacher need only compare the child's drawing with the criteria. If there is doubt as to whether the child passes a particular item, it should be marked "fail".

Norms.--Age norms by sex, for each of the 24 forms, are given. Age equivalents across sex by raw score are also given.

Statistics.--The correlation between VMI scores and CA is .89.

Massad Mimicry Test (MMT) P7

Educational Testing Service

Administration.--The test could be administered by someone with

moderate training, but the scoring should be done by someone experienced in assessing the sound production aspects of language. The administrator plays a tape which provides the model utterance. The child's response is recorded for scoring on the other tape recorder. Each model in Part II may be presented twice.

Content.--The MMT has two parts, with part II subdivided into two subparts. Part I tests the ability of subjects to reproduce phonemes (ages 2 1/2 through adult). Part IIa tests the ability of subjects to reproduce (A) word phrases and two simple sentences of the passive type, and (B) phonemes as they occur in given word phrases (ages 2 1/2 to 3 1/2). Part IIb tests the ability of subjects to reproduce (A) sentences in their functional type and (B) phonemes as they occur in given sentences (ages 4 1/2 through adult).

Scoring.--A manual to code items for a machine scorable form is presented for Part II. Each item is checked, if correct, and the child's actual production is written according to the Webster Key. A scoring guide is provided.

Family Relations Test (FRT) A22

National Foundation for Educational Research

Administration.--The administrator must first establish rapport with the child. Questions are asked and the child's responses are recorded. The questions are related to the child and his family. Questions may be repeated or enlarged as necessary. Small figures of people are used to represent the family. The child is allowed to choose which figures best represent the members of his family. Time required is approximately 20 to 25 minutes.

Content.--The test for young children consists of three areas: (1) positive feelings, both coming from the child and experienced by the child as coming from others; (2) negative feelings, both coming from the child and experienced by the child as coming from others; and (3) feelings of dependency on others.

Scoring.--Scoring is allocated to six categories--Nobody, the Self, Father, Mother, Siblings, and Others. The number of times each person is chosen is summed across items. A discussion of score interpretations is given.

Statistics.--Validation was carried out by comparing various aspects of the test with case histories of subjects. An extensive discussion is presented. For reliability estimates, the odd-even technique was used. The test was subdivided into seven areas. Father, mother, and first mentioned siblings for Positive feelings and Negative feelings yield six areas. The last area is Overprotection and Indulgence. There are, therefore, seven coefficients ranging from .68 to .90 (corrected).

Coloured Progressive Matrices (CPM) C4

The Psychological Corporation

Administration.--The administrator first establishes rapport. The child is then instructed that each of the pictures has a piece missing and the correct replacement piece is one of six shown at the bottom of the page. The child is to indicate which piece is the correct replacement. It may be administered in a group or individually.

Content.--There are three sets used for children ages three to seven--set A (12 items), Ab (12 items), and B (12 items). The stimulus materials consist of a picture with a piece missing. There are six replacement pieces shown, of which one is correct.

Scoring.--The number of correct choices is summed.

Norms.--A table of percentile points by age is given for children ages five to ten.

Statistics.--Test retest reliability for children under age seven is reported as .65. A correlation of .50 with the Crichton Vocabulary Scale and with the Terman-Merrill Scale is also reported. By the age of nine, the coefficients increase to .80 and .65 respectively. Over the entire age range (five to ten) the retest reliability is reported as .90.

Boehm Test of Basic Concepts (BTBC) C2

The Psychological Corporation

Sample.--The BTBC was standardized in 1970, consisting of children enrolled in kindergarten and the first and second grades, in each of 16 cities located across the United States. Low, middle, and high socioeconomic levels were represented.

Administration.--The BTBC may be administered to a group of children by the classroom teacher. The administration procedure is simple and straightforword. The administrator reads the directions and the children respond by marking an "X" on the correct response. The time required for administration is 15 to 20 minutes for each of two booklets.

Content.--There are 50 pictorial items arranged in approximate order of increasing difficulty. These items are divided into two booklets of 25 items each with booklet two being more difficult than booklet one.

Scoring.--A "Class Record Form" is provided with a scoring key with spaces for total score, percentile for each child, number of children answering each item correctly, and percent passing each item. Instructions for scoring are outlined clearly and concisely.

Norms.--Tables are given for converting raw scores to percentile equivalents by grade and socioeconomic level, for the beginning of the year (N=9,737) and midyear (N=2,647). There are also tables presented for percent passing each item by grade and socioeconomic level for the beginning of the year and midyear; and a table for determining percent of children passing an item.

Statistics.--Split-half reliability coefficients for grade and socioeconomic level range from .68 to .90 (corrected). SEM for grade and socioeconomic level range from 1.4 to 3.0.

Children's Embedded Figures Test (CEFT) C8, A8, A37

Consulting Psychologists Press

Sample.--The sample for the CEFT was composed of 160 children ages five to twelve from two Brooklyn public schools. The sample was predominantly MSES.

Administration.--The administrator asks the child to find either a tent or house in the stimulus object. The CEFT is administered to individuals. Although the test is not timed, the time required for administration is approximately 10 to 25 minutes. Perceptual discrimination and practice trials precede the test. For children younger than five, see EC-EFT in the Cincinnati Autonomy Battery.

Content.--There are 25 colored test plates; 11 with a tent (or triangle) as the embedded figure, and 15 with a house as the embedded figure. The figures are embedded within complex realistic pictures of either a boat or a train.

Scoring.--The child's first choice on each item is scored right or wrong.

Statistics.--Reliability ranges from .83 to .90 and validity (against adult embedded-figures test performance) from .70 to .86 for the older children.

A COMPREHENSIVE, DOCUMENTED COMPILATION OF TESTS SUITABLE FOR USE WITH PRESCHOOL CHILDREN

Comments here are supplemental to those appearing in the Introduction. Abbreviations used in the list section are reported here as are additional remarks on the extensity of the collection. Only those tests are included which could be satisfactorily documented for the user either by reference to (1) a supplier, (2) a primary source document or (3) in the case of test revisions or adaptations, to the source in which this modification is mentioned. The revision is usually of a standard, published test that was unsuitable to the age range three through five years prior to its revision. Many revisions are of administration procedures only. Primary documents include those available through the ERIC system. Very occasionally only a secondary source is mentioned--this practice being limited to those instances in which the author is known to be a close professional associate of the instrument's creator or to be a primary investigator in the area from which the test comes. To facilitate user access to documentation, Appendix C (which, with the other appendices, appears at the close of this section, in the final report) contains an alphabetized address directory of publishers, suppliers or responsible parties from whom additional information, usage permission, and tests may be obtained. Appendix D lists bibliographic entries supplemental to those included in Report I. Whenever a source mentioned in Appendix D is used, the symbol (S) follows its publication date to designate the entry's appearance in the Supplemental Bibliography. If this symbol is not attached, the user will find the necessary reference in the project's main bibliography.

The reader may assume that the distinctions earlier outlined among Tests, Observational Procedures, and Technical Procedures were followed, except as noted here. Since the emphasis in the "Tests" list is presumably upon devices which by their nature are the source of standard sampling conditions, one might initially assume that the list contains only objectively scorable, (i.e., conspect valid) instruments. Our rationale for constituting these lists required, however, only that the instruments be objective when administered in certain ways and by certain types of personnel who commonly work with children in schools or who are readily available to schools. The list thus contains instruments to be completed by parents or teachers, by children under minimal supervision in groups, by children individually under close observation, and by an examiner. The persons who may be qualified to administer tests variously include: some responsible person, classroom aid, teacher, psychometrist or other pupil personnel worker, speech and hearing specialist, optometrist, clinical or developmental psychologist, nurse or physician, among others. Who is qualified is determinable either from the nature of the device or from specific restrictions placed upon its usage by custom, law or the supplier. Most fundamentally, these restrictions upon who may administer arise from the competencies required of the administrator to produce a valid assessment of the particular child characteristic(s) of interest.

The "Test" list also contains all of those projective instruments which are available through standard suppliers. These could have been sorted into Tests and Technical Procedures only after making additional assumptions about levels of personnel qualifications. Their inclusion in this one location will allow their ready retrieval, while still requiring a local professional determination of whether available personnel are

sufficiently qualified to warrant use of a particular projective device. Opinions divide sharply among psychologists about the validity of projective devices, as they are customarily used. To debate or to attempt resolution of this issue clearly lies beyond the scope of the present project effort and is better determined by the user. Our own opinions on the matter are limited to that portion of this report which matches evaluation procedures or devices with particular behavioral objectives (see Final Report).

The collection was extended to include those Out of Print tests (OP) and Not Yet Available tests (NYA) which the user might expect to find named in the research and program evaluation literature. American investigators have often enough used tests of British origin to lead us to include these for completeness. Tests for threes through fives constitute the majority of all inclusions, although a few infant tests, which may be valuable with exceptional children, are listed. Questionnaires for parents or teachers are placed in the list also. Some test names which are frequently preceded by author or supplier name appear here with the latter omitted. An asterick (*) in the left hand margin means the test is reviewed in the Inventory of Instruments. The location of that appearance is shown to the right of the test title as a page reference. Abbreviations may be summarized as follows: S--Supplemental Bibliography, OP--Out of Print, NYA--Not Yet Available.

TESTS

ABC Inventory to Determine K and School Readiness. (Research Concepts).

A-B-C Vision Test for Ocular Dominance. (Psychological Corp.).

Adaptive Behavior Rating Scale. (Meyer, ED 030 456).

Albert Einstein Scales of Sensori-Motor Development. (S. Escalona).

Ambco Speech Test Record. (Ambco, Inc.).

American School Achievement Tests: Arithmetic Readiness. (Public School Publishing Co.).

American School Intelligence Test. (Bobbs-Merrill).

*American School Reading Readiness Test. p. 160 (Bobbs-Merrill).

Analysis of Learning Potential. (Harcourt, Brace and World).

Animal Puzzles. (Psychological Corp.--OP).

Anton Brenner Developmental Gestalt Test of School Readiness. (Western Psychological Services).

AO H-R-R Pseudo Isochromatic Plates. (2nd. ed.) (American Optical Co.)

AO School Vision Screening Test. (American Optical Co.)

The APELL Test. (See Assessment Program of Early Learning Levels).

Approach. (B. Caldwell).

Arithmetic Concepts Inventory for Kindergarten. (Montague, 1964).

*Arizona Articulation Proficiency Scale. p. 187 (Western Psychological Services).

Arrow Dot Test. (Part of IES Test, Psychological Test Specialists).

*Arthur Adaptation of the Leiter International Performance Scale. p. 192 (C. H. Stoelting Co.).

*Arthur Point Scale of Performance Tests. p. 158 (Psychological Corp.)

Assessment of Children's Language Comprehension. (Consulting Psychologists Press).

Assessment of Perceptual Development. (Martin and Others, 1969).

*Assessment Program of Early Learning Levels. p. 182 (Edcodyne Corp.).

Attention Span Test. (Boger and Others, 1970).

Attitudes toward Parental Control of Children. (R. M. Stogdill).

*Auditory Discrimination Test. p. 156 (Language Research Associates).

Auditory Visual Pattern Test. (Birch and Belmont, 1965).

*Ayres Space Test. p. 186 (Western Psychological Services).

*Basic Concept Inventory. p. 159 (Follett Publishing Co.).

*Bayley Scales of Infant Development. p. 197 (Psychological Corp.).

Beery-Butenika. (See Developmental Test of Visual-Motor Integration).

Behavior Checklist. (Long, 1966).

Behavior Inventory: Head Start. (Shaw, Eagle and Goldberg, 1968).

Behavior Maturity Rating Scale for Nursery School Children. (Walther Joel--OP).

Behavioral Complexity Test: A Test For Use in Research. (Campus Stores--OP).

Bender Gestalt Test. (Grune and Stratton).

Bender Gestalt Test for Young Children. (Koppitz Method) (Grune and Stratton).

Bender Visual Motor Gestalt Test. (Psychological Corp.).

Binion-Beck Reading Readiness Test for Kindergarten and First Graders. (Psychometric Affiliates).

The Birthday Test. (Brora Centre--NYA).

Blacky Pictures: A Technique for the Exploration of Personality Dynamics. (Psychodynamic Instruments).

Block-Design Test. (See Arthur Point).

Block Sort Test. (Ernhart and Others, 1963).

*Blum-Fieldsteel Developmental Charts. p. 159 (World Book Co.).

*Boehm Test of Basic Concepts. p. 200 (Psychological Corp.).

*Book About Me. p. 160 (Science Research Associates).

Boston Speech-Sound Picture Discrimination Test. (Prendergast, 1968).

Braverman-Chavigny Auditory Projective Test. (American Foundation for the Blind).

*Bristol Social-Adjustment Guides. p. 160 (Educational and Industrial Testing Service).

BRL Concepts Test. (Edwards and Stern, no date).

Brown IDS Self Concept Referents Test. (ETS-Shapiro--NYA).

Brown-Carlsen Listening Comprehension Test. (Harcourt, Brace, and World).

Burt Scholastic Tests. (Staples Press, Ltd.).

*Cain-Levine Social Competency Scales. p. 161 (Consulting Psychologists Press).

Caldwell. (See Preschool Inventory).

California Behavior Inventory for Nursery School Children. (OP--further work 1966, J. M. Sassenrath).

California Preschool Scale. (Bayley, 1949--S).

*California Preschool Social Competency Scale. p. 188 (Consulting Psychologists Press).

*California Short-form Test of Mental Maturity. p. 161 (California Test Bureau).

California Test of Mental Maturity. (California Test Bureau).

*California Test of Personality. p. 162 (California Test Bureau).

Canadian Intelligence Examination. (Ryerson Press).

Cartoon Test of Children's Attention to and Recognition of Emotion. (Gotts, 1968a--NYA).

CASES. (R. Spaulding).

Cassel Developmental Record. (The Psychologists and Educators Press).

Categories Test, Revised. (R. Reitan).

Cattell. (See also IPAT).

Cattell Culture-Fair Intelligence Test. (Bobbs-Merrill).

Cattell Infant Intelligence Scale. (Psychological Corp.).

Cattell Intelligence Tests. (G. C. Harrup).

Chicago Non-Verbal Examination. (Psychological Corp.).

Chicago Test of Visual Discrimination. (Now in SRA Primary Mental Abilities).

Child Behavior Rating Scale. (Western Psychological Services).

Child Behavior Survey Instrument. (Katz, 1969).

Child Cooperation Measure. (ETS-Shipman--NYA).

Child Description Checklist, Head Start. (Shaw, Eagle, and Goldberg, 1968--S).

Child Development Questionnaire. (Wellesley Public Schools).

Children's Apperception Test. (C. P. S. Inc.).

Children's Attitudinal Range Indicator. (Westinghouse Learning Corp.).

*Children's Auditory Discrimination Inventory. p. 184 (C. Stern).

Children's Auditory Test. (Volta Bureau).

Children's Behavior Rating Scale. (E. I. Burdock).

*Children's Embedded Figures Test. p. 201 (Consulting Psychologists Press).

Children's Hypnotic Susceptibility Scale. (Consulting Psychologists Press).

Children's Individual Test of Creativity. (Foster, 1967).

Children's Locus of Control-External. (J. O. Miller).

Children's Picture Information Test. (Spastic Aid Council).

Children's Projective Pictures of Self-Concept. (ED 028 832).

Children's Reactive Curiosity Scale. (Penney and McCann, 1964--S).

Children's Self-concept Index. (Westinghouse Learning Corp.--NYA).

*Cincinnati Autonomy Test Battery. p. 195 (Banta, 1970--S).

Classification Test for Beginners in Reading. (OP).

Classroom Behavior Inventory. (Westinghouse Learning Corp.--NYA).

Classroom Observation Rating Scale. (Chorost and Others, 1967).

Clymer-Barrett Prereading Battery. (Personnel Press).

*Cognitive Abilities Test. p. 162 (Houghton-Mifflin).

Cognitive Maturity Test. (See Ryckman, 1967).

Cohn Visual Acuity Chart. (Stoelting).

Cole-Vincent Group Intelligence Test for School Entrants. (Bureau of Educational Measurement).

Color Identification Test. (Meier, Nimnicht, and McAfee, 1968--S).

Color Meaning Awareness Test. (Renninger and Williams, 1966).

*Coloured Progressive Metrices. p. 200 (Psychological Corp.).

Columbia Mental Maturity Scale. (Harcourt, Brace, and World).

Comprehensive Mathematics Inventory: An Experimental Instrument for Assessing Youngsters Entering School. (Rea and Reys, 1970).

*Concept Assessment Kit--Conservation. p. 157 (Education and Industrial Testing Service).

Concept Test for Children. (Barbrack and Horton, 1970).

Conceptual Styles Sorting Task. (ED 018 263; Kagan, Moss, and Sigel, 1963--S).

Conceptual Systems Test. (Harvey and Others, 1966).

Conservation Pictures Test. (Zimiles, 1966--S).

Constant-choice Perceptual Maze Attitude of Responsibility Test. (Formerly "Line Centering Test) (J. C. Park--OP).

Cooperative Preschool Inventory. (Educational Testing Service).

Copy Forms Test. (Ernhart and Others, 1963).

Creative Ability Inventory. (Winkler Publications).

Crichton Vocabulary Scale. (Lewis and Co., Ltd.).

Curiosity Box. (See Cincinnati Autonomy Test Battery).

Davis-Eells Games: Test of General Intelligence. (World Book Co.)

Delayed Recall of Designs. (Kagan, 1966).

Denver Developmental Screening Test. (Frankenburg and Dodds, 1967--S).

Design Recognition Test, (Revised) (D.Kyle).

Detroit Adjustment Inventory. (Bobbs-Merrill).

Detroit Beginning First-Grade Intelligence Test (Rev.). (Harcourt, Brace, and World).

*Detroit Kindergarten Test. p. 163 (World Book Co.).

Delay of Gratification Task. (Zimiles, 1967).

*Detroit Test of Learning Aptitude. p. 163 (Bobbs-Merrill).

Developmental Guidelines. (M. B. Karnes).

Developmental Potential of Preschool Children. (Grune and Stratton).

Developmental Status of the Preschool Child as a Prognosis of Future Development. (Bureau of Publications).

*Developmental Test of Visual-Motor Integration. p. 198 (Follett).

Devereux Elementary School Behavior Rating. (Devereux Foundation Press).

Diagnostic Reading Scales: Spache. (California Test Bureau).

Diagnostic Reading Tests. (Committee on Diagnostic Reading Tests).

Draw a Line Test. (Massari, Hayweisser and Meyer, 1969).

Draw-A-Person. (Western Psychological Services).

Drawing-Completion Test: A Projective Technique for the Investigation of Personality. (Still in use but OP).

Driscoll Play Kit. (Psychological Corporation).

Dvorine Animated Fusion Training Charts. (Scientific Publishing Co.).

Dvorine Pseudo-Isochromatic Plates. (Harcourt, Brace, and World).

Eames Eye Test. (Harcourt, Brace, and World).

Early-Adjustment-To-School Scale. (Hartup, 1959--S).

Early Childhood Embedded Figures Test. (See Cincinnati Autonomy Test Battery).

Early Childhood Language Tests . (Edwards and Stern, no date).

Early Detection Inventory. (Follett).

Easel Age Scale. (California Test Bureau).

*Echoic Response Inventory for Children. p. 183 (C. Stern).

Education Attitude Survey (Parent).(Shipman, 1966).

Eight-Block Sorting Test. (Hess) (ED 018 265).

Emotion Recognition Task. (Izard, 1968).

Englemann. (See Basic Concepts Inventory).

English Picture Vocabulary Test. (NFER Publishing Co.).

ETS Matched Pictures Language Comprehension Task. (ETS--NYA).

ETS Story Sequence Task. (ETS--NYA).

An Evaluation Scale for Four- and Five-Year-Old Children. (Butler, 1965).

Evanston Early Identification Scale. (Follett).

Experimental Photographic Self-Concept Test. (Boger and Knight, 1969).

Expressive Movement Chart. (Grune and Stratton--OP).

*Expressive Vocabulary Inventory. p. 183 (C. Stern).

Family Adjustment Test. (Psychometric Affiliates).

Family Relations Indicator: A Projective Technique for Investigating Intra-Family Relationships. (NFER Publishing Co.).

*Family Relations Test: An Objective Technique for Exploring Emotional Attitudes in Children. p. 199 (NFER Publishing Co.) (cf Hillery, Lindgren, and Remstad, 1969).

Feature Profile Test: Pintner-Paterson Modification. (See Arthur)

Figure-Ground Test (Rev.). (D. Kyle).

Figure Recognition Test. (Educational Testing Service).

*First Grade Screening Test. p. 157 (American Guidance Service).

Fisher-Cogemann Test of Articulation Competence. (Houghton-Mifflin).

Form Board Test. (E. Starkweather).

Foster Mazes. (Stoelting).

Freeman Acuity-Tester. (Freeman Technical Associates).

French. (See balance of title minus "French").

*Frostig Developmental Test of Visual Perception. p. 156 (Consulting Psychologists Press).

*Full Range Picture Vocabulary Test. p. 179 (Psychological Test Specialists).

*Gates Reading Readiness Test. p. 178 (Bureau of Publications).

Gates-MacGinitie Readiness Skills Test. (Psychological Corp.).

Gates-MacGinitie Reading Readiness. (Teachers College Press).

Gates-MacGinitie Reading Tests: Readiness Skills. (Teacher's College Press).

Generic Identity Scale (Live Form). (De Vries, 1969--S).

*Gesell Developmental Schedules. p. 193 (Psychological Corp.).

Goldman-Fristoe Test of Articulation. (American Guidance Service).

*Goldman-Fristoe-Woodcock Test of Auditory Discrimination. p. 189 (American Guidance Service).

Goodenough Draw-A-Man Test. (See Goodenough Intelligence Test) (Harcourt, Brace, and World).

*Goodenough-Harris Drawing Test. p. 178 (Harcourt, Brace, and World).

Graded Word Reading Test. (University of London Press, Ltd.).

Graded Word Spelling Test. (Oliver and Boyd, Ltd.).

Graphoscopic Scale: A Projective Psychodiagnostic Method. (J. Pikunis; University of Detroit Bookstore).

Gross Geometric Forms: Creativity. (R. B. Gross).

Gross Motor Tasks. (Edwards, 1968).

Group Test of Color/Form Preferential Behavior. (Gotts, 1968b).

Group Test of Learning Capacity: Dominion Tests. (Guidance Centre).

Group Test of Reading Readiness: Dominion Tests. (Guidance Centre).

Guidance Cumulative Folder and Record Forms. (Chronicle Guidance Publications).

*Gumpgookies. p. 194 (D. Adkins).

*Haggerty-Olson-Wickman Behavior Rating Schedules. p. 164 (World Book).

Halstead Battery of Neuropsychological Tests. (Halstead and Rennick, 1966--S).

Haptic Perception Test. (Concannon, 1966; Coyle and Concannon, 1968).

Haptic Test. (Sigel and Olmstead, 1967).

Haptic-Visual Matching Test. (Kagan, 1966; Kagan and Others, 1964--S).

*Harrison-Stroud Reading Readiness Profiles. p. 179 (Houghton-Mefflin).

Head Start. (See Behavior Inventory; Preschool Inventory).

Head Start Arithmetic Test. (Adkins, 1969).

Healy Pictorial Completion Tests. (See Arthur).

Hejna Developmental Articulation Test. (Speech Materials).

Holborn Reading Scale. (G. C. Harrup).

*Holborn Vocabulary Test for Young Children. p. 192 (G. C. Harrup).

Holtzman Inkblot Technique. (Psychological Corp.).

Horn-Hellersberg Test. (E. F. Hellersberg--OP).

House-Tree-Person Projective Technique. (Western Psychological Services).

*Houston Test for Language Development. p. 188 (M. Crabtree).

Human Figure Drawing Test. (Grune and Stratton).

*Illinois Test of Psycholinguistic Abilities. p. 177 (University of Illinois Press).

Illinois Test of Self-Derogation. (Hillery, Lindgren, and Remstad, 1969).

Illuminant-Stable Color Vision Test (2nd. ed.). (Freeman Technical Associates).

Individual Reading Test. (Australian Council).

Inductive Concept Identification Test. (Keislar and Schutz, 1969).

Infant and Maternal History. (D. Weikart).

Inferred Self-Concept Judgment Scale. (E. McDaniel).

Instances. (See Ward).

Instructional Concepts Inventory. (Southwest Regional Laboratory).

Integrated Articulation Test. (Cerebral Palsy Review).

Intelligence Tests for Children. (Methuen and Co.).

Intensity of Task Involvement Scale. (B. McCandless).

Interaction Chronograph. (OP).

Inventory of Developmental Tasks. (Santa Clara Unified School District).

Inventory of Factors Affecting Test Performance. (F. Schachter;cf. Boger and Cunningham, 1970).

Inventory of Socialization of Bilingual Children Ages 3-10. (ED 027 062).

IPAT Culture Fair Intelligence Test. (IPAT).

Irwin Articulation Test. (Byrne, 1967).

The IT Scale for Children. (Psychological Test Specialists).

Jensen Alternation Board. (Lafayette Instrument Co.).

Johns Hopkins Perceptual Test. (Rosenberg, 1968--S).

Kahn Intelligence Test. (Psychological Test Specialists).

Katz Auditory Screening Test. (Follett).

Kelvin Measurement of Ability in Infant Classes. (R. Gibson and Sons).

Kent-Rosanoff Free Association Test. (Stoelting).

Keystone Ready to Read Tests. (Keystone View Co.).

Kindergarten Evaluation of Learning Potential. (Webster Division, McGraw-Hill).

Kindergarten Health Check for Parents. (OP).

Kindergarten-Primary Articulation Test. (OP).

Kindergarten Tests (Battery). (DeHirsch, Jansky, and Langford, 1966--S).

Kohn Problem Checklist. (M. Kohn).

Kohn Social Competence Scale. (M. Kohn).

Kuethe's Social Schemata Technique. (Klaus and Grey, 1968)

Kuhlmann-Anderson Measure of Academic Potential. (Psychological Corp.)

*Kuhlmann-Andersor Test. p. 164 (Personnel Press).

Language and Speech Evaluation Test. (Anastasiow, 1966).

Language Modalities Test. (Herbschman, 1967)--Adapted.

Laradon Articulation Scale. (Western Psychological Services).

Learning Methods Test (Form K). (Mills Center, Inc.).

*Lee-Clark Reading Readiness Test. p. 179 (California Test Bureau).

Left-Right Discrimination Test. (Boone and Prescott, 1968).

Leiter International Performance Scale. (Stoelting).

Let's Look at Children. (Educational Testing Service).

Lincoln-Oseretsky (Modified). (Ozer and Milgram, no date).

*Lincoln-Oseretsky Motor Development Scale. p. 115 (Stoelting).

Lippincott Reading Readiness Test. (J. B. Lippincott Co.).

*Lorge-Thorndike Intelligence Tests. p. 164 (Houghton-Mifflin).

Lowenfeld Kaleidoblocks. (Badger Tests).

Lowenfeld Mosaic Test. (Badger Tests).

Lurcat Test of Graphical Abilities. (Lurcat and Kostin, 1970).

Machover Draw-A-Person Test. (C. C. Thomas, Publishers) (Also called Figure Drawing Test).

Maico Audiometers. (Maico Electronics).

Manikin Test. (See Arthur).

Mare and Foal Formboard. (See Arthur).

Mark-Car Accuracy Test. (Graham and Others, 1963).

Maryland Parent Attitude Survey. (D. K. Pumroy).

Massachusetts Vision Test. (Welch Allyn, Inc.).

*Massad Mimicry Test. p. 198 (ETS--NYA).

Matching Familiar Figures Test. (Kagan, 1966; Kagan and Others, 1964).

Mateer Inversion Test. (Ed 015 009).

The Matrix Test. (ETS--NYA; H. Zimiles).

*Maturity Level for School Entrance and Reading Readiness. p. 166 (American Guidance Service).

Maxfield-Bucholz Scale of Social Maturity for Use with Preschool Blind. (American Foundation for the Blind).

Maze-Trail Test. (Santostephano and Stayton, 1967).

McCarthy Scale of Children's Abilities. (Psychological Corp.--NYA).

McHugh-McParland Reading Readiness Test. (Cal-State Bookstore).

Measurement of Self-Concept in Kindergarten Children. (Research Concepts).

Measurement of Social Competence: Manual. (See Vineland).

Measuring Scale for Freehand Drawing. (Johns Hopkins Press).

*Mental Abilities. p. 167 (Scholastic Testing Service).

Merrill-Palmer Logarithmic Developmental Graph. (Merill-Palmer Institute).

Merrill-Palmer Personality Rating Scale, Adapted. (Krider and Petsche, 1967).

Merrill-Palmer Preschool Performance Test. (Stoelting).

*Merrill-Palmer Scale of Mental Tests. p. 196 (Stoelting).

*Metropolitan Readiness Test. p. 167 (Harcourt, Brace, and World).

Michigan Junior Screening Instrument. (Hatfield, Barrett, and Nudell, 1967).

Mill Hill Vocabulary Scale. (Now in Crichton).

Minnesota Percepts-Diagnostic Scale. (Journal of Clinical Psychology).

*Minnesota Preschool Scale. p. 165 (American Guidance Service).

Minnesota Tests of Creative Thinking. (Dreyer and Wells, 1966).

Mischel Technique. (Boger and Knight, 1969).

Modified PARI for Mothers and Fathers. (Emmerich, 1969--S).

*Moore Eye-Hand Coordination. p. 155 (J. E. Moore and Associates).

*Mother-Child Relationship Evaluation. p. 185 (Western Psychological Services).

Mother Goose Problems Test. (E. P. Torrance).

Motor Inhibition Test. (MacCoby and Others, 1965--S).

Motor Impulse Control. (See Cincinnati ATB).

*Motor Steadiness Battery for Children. p. 185 (H. Klove; cf. Knights and Moule, 1968).

Motoric Inhibitions Test. (Mumbauer and Miller, 1969; Mumbauer, 1969b).

MSU Puzzle Box Task. (Boger and Knights, 1969--S).

Multiple Categorization Test. (Sigel and Olmstead, 1967; Sigel and Olmstead, 1968--variant of other Sigel work).

Multiple Choice Picture Story Projective Test. (L'Abate, 1962).

*Murphy-Durrell Diagnostic Reading Readiness Test. p. 165 (Harcourt, Brace, and World).

N. B. Group Tests. (National Bureau of Education and Social Research).

Nebraska Test of Learning Aptitude for Young Deaf Children. (M. S. Hiskey).

New Rhode Island Intelligence Test. (G. L. Betts).

New York Child Development Scales. (Jenkins and Phillips, 1968).

New York School Vision Tester. (Bausch and Lomb).

Non-Language Multi-Mental Test. (Teachers College Press).

Non-Verbal Intelligence Tests for Deaf and Hearing Subjects. (J. B. Wolters).

Non-Verbal Representation Tasks. (Franklin, 1970).

Nursery School Adjustment Scale. (Westman, Rice, and Berman, 1962).

Nursery School Behavior Inventory. (Walker, 1963).

Object-Picture Categorization Test. (Sigel and Olmstead, 1967).

Object Sort Test. (Santostefano and Stayton, 1967).

O'Connor Wiggly Block. (Stoelting).

OEO Parent Activity Form. (Office of Child Development).

Ontario School Ability Examination. (Ryerson Press).

Open Field Test. (Unstructured variant of Sigel Sorting Task).

Organic Integrity Test. (Psychodiagnostic Test Co.).

Originality Test. (E. Starkweather).

Oseretsky Tests of Motor Proficiency. (American Guidance Service).

Otis Group Intelligence Scale. (Harcourt, Brace, and World--OP).

*Otis-Lennon Mental Ability Test. p. 166 (Harcourt, Brace, and World).

*Parallel Sentence Production Test. p. 183 (C. Stern).

Parent Attitude Inquiry. (Baumrind, 1971--S).

Parent Attitude Questionnaire. (Appalachia Education Laboratory).

Parent Attitude Research Instrument. (Schaefer and Bell, 1958--S).

Parent Attitude Survey. (McCarthy, 1968).

*Parent Readiness Evaluation of Preschoolers. p. 175 (Priority Innovations).

Parental Role Questionnaire. (Emmerich, 1969--S).

Parent's Expectation Inventory. (Nakamura and Rogers, 1969).

Parent's Rating Scale. (OP).

PARI. (See Parent Attitude Research Instrument).

Patterns. (See Ward).

*Peabody Individual Achievement Test. p. 176 (American Guidance Service).

*Peabody Picture Vocabulary Test. p. 174 (American Guidance Service).

Perceptions of Adult Role: Real and Pretend. (Aldous, 1969).

Performance Tests of Intelligence: A Series of Non-Linguistic Tests for Deaf and Normal Children. (Oliver and Boyd, Ltd.).

Permissiveness Scales. (Sears, Rau, and Alpert, 1965).

Persistence. (See Cincinnati Autonomy Test Battery).

Personal and Social Development Program. (SRA--OP).

Personality Evaluation Form: A Technique for Organization and Interpretation of Personality Data. (Western Psychological Services).

Personality Rating Chart for Preschool Children. (Merrill-Palmer--OP).

Personality Rating Scales for Preschool Children. (Merill-Palmer--OP).

Personal-Social Adjustment Rating Scales. (Goldstein-Chorost Modification) (Office of Child Development).

Photo Analysis Test. (Subtest of IES--Psychological Test Specialists).

Pickford Projective Pictures. (Springer Publishing Co.).

*Pictorial Test of Intelligence (French's). p. 177 (Houghton-Mifflin).

Picture Categorization Test, Modified. (Sigel, Jarman, and Hanesion, no date).

Picture Sociometric Technique. (McCandless and Marshall, 1957--S).

Pintner-Patterson Performance Tests. (Teacher's College Press).

*Pitner-Cunningham Primary Test. p. 168 (Harcourt, Brace, and World).

PLA. (T. Risley).

Play Situation Picture-Board Sociometric. (Weber, no date--based on Boger).

Pluralization Testing. (Anisfeld and Tucker, 1966).

Porteus Maze Tests (Vineland Rev.). (Psychological Corp.).

Porteus Maze Tests. (Stoelting; cf. Arthur).

Predictive Index Tests. (De Hirsch, Jansky and Langford, 1966--S).

*Pre-Kindergarten Goal Card. p. 182 (Cincinnati Public Schools).

Pre-Primary Mental Ability. (Scholastic Testing Service).

Pre-Primary Profile. (Science Research Associates).

Prereading Inventory of Skills Basic to Beginning Reading. (Houghton-Mifflin).

Prereading Test. (Allyn and Bacon).

Preschool Academic Skills Test. (M. M. Provus; ED 028 045).

*Preschool Attainment Record. p. 167 (American Guidance Service).

Preschool Embedded Figures Test. (ETS--NYA).

*Preschool Inventory. p. 168 (Educational Testing Services. Also called Cooperative Preschool I.).

Preschool Kindergarten Modern Mathematics Test. (Williams, 1964).

Preschool Kindergarten Readiness Inventory. (Williams, 1964).

*Preschool Language Scale. p. 181 (C. E. Merrill Publishing Co.).

Preschool Outcomes Rating Scale. (Fleege, Black, and Rackaaskas, 1967).

Preschool Personality Questionnaire . (IPAT--NYA).

Preschool Readiness Battery. (R. Klaus).

Pre-School Record Form. (E. and S. Livingstone).

Preschool Self-Concept Picture Test. (RKA Publishing Co.; cf. Boger and Knight, 1969--S).

Preschool Teachers Rating Scale for Children's Social-Emotional Behavior. (Boger and Cunningham, 1970).

Pre-Tests of Vision, Hearing, and Motor Coordination. (California Test Bureau).

Primary Academic Sentiment Scale. (Priority Innovations).

*Primary Mental Abilities. p. 170 (Science Research Associate).

Primary Visual Motor Test. (Grune and Stratton).

Process for In-School Screening of Children with Emotional Handicaps. (Educational Testing Service).

Profile of Basic Learning Abilities. (Consulting Psychologists Press).

Progressive Matrices. (See Coloured P. M.).

Psychoeducational Profile of Basic Learning Abilities. (See Valett).

Pupil Adjustment Inventory. (Houghton-Mifflin--OP).

Pupil Behavior Inventory. (Campus Publishers; Also called Vinter P.B.I.).

Questionnaire for Parents as Teachers. (Weisbendes, 1969).

Quick Screening Scale of Mental Development. (Psychometric Affiliates).

*Quick Test. p. 191 (Psychological Test Specialists).

Racial Awareness Test. (Renninger and Williams, 1966; Abel and Sahinkaya, 1962).

Racial Attitudes of Parents. (Diamant, 1969).

Rail-Walking Test. (See Buros, 1961--S).

Randall's Island Performance Series. (Volta Bureau).

Rating Form for Fear or Discomfort and Surprise. (De Vries, 1969--S).

Raven's. (See Coloured P. M.).

Reactive Object Curiosity Test. (Mumbauer, 1969b).

Reading Aptitude Tests. (Houghton-Mifflin).

Reading Prognosis Test. (S. C. Feldmann).

Reading Readiness: National Achievement Tests. (Psychometric Affiliates).

Reading Readiness Test. (Steck Co.--OP).

Reitan-Indiana Neuropsychological Battery for Children. (R. Reitan).

Report Form on Temperament and Social Behavior. (C. W. Valentine--OP).

Reputation Among Peers. (Klaus and Grey, 1968).

Response Variability. (See Cincinnati Autonomy Test Battery).

Revised Stanford-Binet Intelligence Scale (2nd. rev.).(Houghton-Mifflin).

Revised Stanford-Binet Intelligence Scale (3rd. rev.). (Houghton-Mifflin).

Rhodes WISC Scatter Profile. (Educational and Industrial Testing Service).

*Riley Preschool Development Screening Inventory. p. 186 (Western Psychological Services).

Ring and Peg Tests of Behavior Development. (Psychometric Affiliates).

Risk Taking I & II. (ETS--NYA).

Robbins Speech Sound Discrimination and Verbal Imagery Type Test. (Expression Co.).

Rock-A-Bye Baby: A Group Projective Test for Children. (Pennsylvania State University Audio-Visual Center).

Rod and Frame Test. (Dreyer, Nebelkoff, and Dreyer, 1969; Gell, Herdtner, and Lough, 1968; Gill, 1965--S).

Rorschach. (Grune and Stratton).

Rosenzweig Picture-Frustration Study. (S. Rosenzweig).

Rutgers Drawing Test. (A. S. Starr).

Ryckman-Bereiter-Powere Auditory Closure Test. (Ryckman, 1967).

San Francisco Inventory of Communication Effectiveness. (Hodges, Spicker, and McCandless, 1967).

Sapir Developmental Scale. (Sapir, 1966; Sapir and Wilson, 1969; Contact S. G. Sapir).

Sarason-Type Anxiety Rating Scale. (Mendel, 1965).

Sceno Test. (Malmivaara and Kolho, 1961).

Scholastic Mental Ability Tests. (Scholastic Testing Service).

Scholastic Reading Readiness Test. (Scholastic Testing Serive--OP).

Schonell Reading Tests. (Oliver and Boyd, Ltd.).

School Apperception Method. (Springer Publishing Co.).

School Readiness: Behavior Tests Used at the Gesell Institute. (Western Psychological Services).

School Readiness Checklist. (Research Concepts).

School Readiness Evaluation. (Ozer and Milgram, no date).

School Readiness Inventory. (For Revision, see Maturity Level).

*School Readiness Survey. p. 170 (Consulting Psychologists Press).

Screening Test for the Assignment of Remedial Treatments. (Priority Innovations).

Screening Test of Academic Readiness. (Priority Innovations).

Seguin-Goddard Formboard. (See Arthur).

Self Concept Rating Scale. (ED 028 832).

Self Concept Silhouettes. (R. Colvin).

Self Social Constructs Test. (Long, Henderson, and Ziller, 1968--S; cf. Boger and Knights, 1969--S; Contact R. Carlsen).

*Series of Emergency Scales: Kent. p. 189. (Psychological Corp.).

Sex-Role Attitude Test, Parents. (Lansky, 1967).

Sheldon Prereading Scale. (Lehman, 1967).

*Short Test of Educational Ability. p. 169 (Science Research Associates).

Sigel. (See Test name).

Skills Battery, Modified. (Berger, 1969).

Slosson Drawing Coordination Test for Children and Adults. (Slosson Educational Publications).

Slosson Intelligence Test. (Slosson Educational Publications).

Social Status Scale. (University of Minnesota Press).

Social Stratification Guidelines. (ETS--Attn: L. J. Stricker).

South African Picture Analysis Test. (Swets and Zeitlinger).

Spache Binocular Reading Test. (Keystone View Co.).

Speech Articulation Test for Young Children. (Brigham Young University Press).

Speech Battery. (Byrne, 1962).

Spiral After Effect Test. (Psychological Research and Development Corp.).

*Sprigle School Readiness Screening Test. p. 180 (H. A. Sprigle).

SRA. (See specific test name).

*SRA Tests of General Ability. p. 169 (Science Research Associates).

Stamp Behaviour Study Technique. (Australian Council).

*Stanford-Binet Intelligence Scales. p. 193 (Houghton-Mifflin).

*Stanford Early School Achievement Test. p. 169 (Harcourt, Brace, and World).

Starkweather. (See Originality; Form Board).

Steinbach Test of Reading Readiness. (Scholastic Testing Service).

Stencil Design Test. (See Arthur).

Stroop-Like Color-Form Task. (Cramer, 1967).

Structured Doll Play Test. (Test Developments).

Structured Test. (A preformed-grouping variant of the Sigel Sorting Task).

*Stycar Hearing Tests. p. 191 (NFER Publishing Co.).

Stycar Vision Test. (NFER Publishing Co.).

Supplementary Profile for: Wechsler Preschool and Primary Scale of Intelligence. (Consulting Psychologists Press).

Symptom Checklist. (Shaw, Eagle, and Goldberg, 1968--S).

Teacher Irritability Scale. (Pierce-Jones and Others, 1966).

Teacher's Rating Scales for Pupil Adjustment. (University of Chicago Press--OP).

Templin-Darley Screening and Diagnostic Tests of Articulation. (Bureau of Educational Research and Service).

Templin Speech Sound Discrimination Test. (Templin, 1957--S).

Ten Silhouettes. (B. E. Dockar-Drysdale).

*Test of Auditory Discrimination. p. 189 (American Guidance Service).

Test of Basic Information. (M. H. Moss).

Test of Concept Utilization. (Crager; Western Psychological Services--NYA).

Test of "G": Culture Fair. (IPAT).

Test of Impulse Control. (Variant of Motor Impulse Control).

*Test of Verbal Maturity. p. 181 (Baltimore City Public Schools).

Tests of Basic Experience. (California Test Bureau).

Tests of Basic Language Competencies. (E. J. Cervenka).

Tests of General Ability: Inter-American. (Guidance Testing Associates).

Tests of Mental Development, Kuhlmann. (Educational Test Bureau).

Thematic Apperception Test. (Psychological Corp.).

Thematic Apperception Test: Thompson Modification. (Harvard University Press).

"This I Believe" Test. (Harvey and Others, 1966; ED 018 249).

Thomas Self-Concept Values Test. (Educational Service Co.).

Three-Dimensional Auditory Discrimination Test. (Coffman and Dunlap, 1968).

Time Concept Test. (Stephens, 1964).

Torrance Tests of Creative Thinking. (Personnel Press).

Toy Preference Test. (Sears, Rau, and Alpert, 1965).

Toy Sorting Task. (ED 018 264).

Toy World Test. (J. C. Baisden).

T/O Vision Testers. (Titmus Optical Co.).

Travis Projective Pictures. (Griffin-Patterson Co., Inc.--OP).

TV Test Battery. (Meier, 1967--S).

Twitchell Allen Three-Dimensional Personality Test. (D. Twitchell-Allen).

Two-Figure Formboard. (See Arthur).

UCLA Visual Discrimination Inventory. (See Visual D.I.).

Uses. (See Ward).

*Valett Developmental Survey of Basic Learning Abilities. p. 171 (Consulting Psychologists Press).

*Van Alstyne Picture Vocabulary Test. p. 171 (Harcourt, Brace, and World).

Vance Language Skills Test. (Vance, 1967).

Vane Kindergarten Test. (Clinical Psychology Publishing Co.)

*Verbal Language Development Scale. p. 172 (American Guidance Service).

*Vineland Social Maturity Scale. p. 172 (American Guidance Service).

*Vision, Hearing, and Motor Coordination. p. 155 (California Test Bureau).

Visual-Analytic Skills Test. (Gotts, 1967--S).

*Visual Discrimination Inventory. p. 184 (C. Stern).

*Visual Motor Gestalt Test. p. 171 (American Orthopsychiatric Association).

Walk a Line Slowly Test. (Hayweisser, Massari, and Meyer, 1968; Massari, Hayweisser, and Meyer, 1969).

Ward Creativity Tests: Instances, Patterns, Uses. (Ward, 1968--S).

Watson Reading Readiness Test. (C. S. Hammond and Co.).

Watts English Language Scale. (Watts, 1944--S).

Watts Vocabulary Scale for Young Children. (Watts, 1944--S).

Webster Reading Readiness Test. (OP).

*Wechsler Intelligence Scale for Children. p. 173 (Psychological Corp.).

*Wechsler Preschool and Primary Scale of Intelligence. p. 74 (Psychological Corp.).

Weikart Educational Attitude Test. (Weikart, 1967).

Wetzel Grid Charts. (NEA Service, Inc.).

*Wide Range Achievement Test. p. 173 (Psychological Corp.).

Width-Weight Tables. (Stanford University Press).

Williams Intelligence Test for Children with Defective Vision. (University of Birmingham Institute of Education).

Winnetka Scale for Rating School Behavior and Attitudes. (OP).

Winterbottom "Strength and Urgency of Maternal Pressure for Independence". (Sears, Rau, and Alpert, 1965).

Wishes and Fears Inventory. (Child Guidance Clinic--OP--single copies only).

Wolff Security Test. (Grune and Stratton).

Word Recognition Test. (University of London Press).

Ypsilanti Rating Scale. (D. P. Weikart; ED 001 829).

A BEHAVIORAL - CHARACTERISTICS LISTING OF OBSERVATIONAL PROCEDURES FOR USE WITH PRESCHOOL CHILDREN

The emphasis of this second list is upon procedures for observing the child, training observers for that task, and recording events in some standard way. The user first will enter the alphabetized list of behavioral characteristics to find those of interest. For each entry, he will discover one or more sources which are recommended for their specification of that particular observational, data-gathering procedure. Bibliographic entries are handled here exactly as they were for the "Tests" list.

The source documents will ordinarily indicate the level of inter-rater agreement or reliability to be expected. When one's own trainees reach comparable levels of agreement in their use of the procedure, they may be considered at criterion for purposes of data collection during either research or evaluation activites. Even after observers have reached criterion, periodic rechecks seem desirable, since systematic drifts in the basis of judgment may occur over time.

The reader may assume that such observational training can be given to any intelligent, socially perceptive individual. That is, the procedures listed here generally do not require that one have special educational and intellectual qualifications to participate satisfactorily in the training. As a general guideline, however, as the number of event types to be attended to and simultaneously discriminated increases, the intellectual demands seem to increase rapidly. Seven to ten categories may be an upper limit for many observers of average to slightly above average general ability. If the number of necessary discriminations

exceeds this, reliability can be expected to suffer. Inherent organizational principles, that allow the observer to eliminate multiple possibilities with a single decision at one stage of the classification process, have the effect of reducing the overall difficulty of making reliable observations. As one's experience in using a particular observational procedure increases, his facility and accuracy improve. Thus, the efficiency and cost benefits associated with the continued use of a procedure serve to point up the importance of careful initial selection of child characteristics to be studied. Procedures which exceed these practical limits, even though they may be primarily observational, are placed in the Technical Procedures listing.

A single observer can be expected to reach and maintain criterion performance for more than one observational procedure, so long as he is not required to use multiple procedures in the same session. That is, as long as the observer's integrity as a serial processor of information is not compromised, he may in effect be programmed for several sequential operations. If evaluation can be scheduled as a continuous process, either by a formative approach to evaluation or by scheduling summative evaluation at varying times for different instructional groupings, an evaluation director can capitalize on the foregoing human observer factors by creating a separate observer role function within his organization. Continuous functioning in the observer role will in turn create efficiency and cost benefits. Conversely, the occasional, sporadic introduction of line personnel into the observer role appears to be a costly and empirically marginal operation.

The tendency of evaluators not to use observational procedures more widely, while they rely heavily upon conventional testing devices, may in

fact be traceable to their inclination to deal with evaluation as a periodic, often spasmodic, event, i.e., to cast every evaluation into the mold of a test-retest design. This kind of evaluation makes observation expensive and impractical at best. But evaluation of selected characteristics by observation becomes practical once the necessary administrative decisions are made, to treat evaluation as an integral function of instruction and learning.

In early childhood education, particularly, the role of observation is of paramount importance to evaluation. To test in the conventional sense is a poor and clumsy alternative for many child characteristics. The role accorded to observation in the assessment of educational outcomes will be apparent in the second portion of this report, which deals with the matching of objectives to measures. The place given to observation is further evidenced in the subsequent recommendations which are made about how to elevate our assessment capability beyond its present level. A balanced approach to measurement should emphasize the selection of that combination of tests, observational procedures, and technical procedures which best provides the construct validity required to determine the effectiveness of particular educational programs in producing, on the average, in the child what the program objectives say will be accomplished.

OBSERVATIONAL PROCEDURES

Accident Proneness. (Federer and Dawe, 1964).

Adaptive Behavior to Demands. (Hertzig and Others, 1968; Massari, Hayweisser, and Meyer, 1968; Moriarty, 1961; cf. the "Binet Rating Scale" of E. K. Beller; Thomas, Chess, and Birch, 1968).

Adjustment. (Hirst, 1969; Highberger, 1955--S; Johnson, H.S., 1965).

Aggression. (Marshall, 1961; Beller, 1969--S; Kagan and Moss, 1962--S; Dorman, 1967; Wolff, 1961; Bandura, Ross, and Ross, 1961; Emmerich, 1966; Feshbach and Feshbach, 1969; Patterson, Littman, and Bricker, 1967; Sears, Rau, and Alpert, 1965).

Ascendance. (Frazier, 1964).

Aspiration; Achievement Orientation. (Crandall and Others, 1960; Kagan and Moss, 1962--S).

Attending Behavior. (Palmer and Others, 1968; Lewis and Others, 1967; cf. "Intensity of Task Involvement Scale"- B. McCandless).

Autonomy. (Emmerich, 1966; Emmerich, 1964; Beller, 1969--S; Nakamura and Rogers, 1969).

Cognition: Piaget. (Woodward and Stern, 1963; Gouin Decarie, 1965; cf. Technical Procedures). General (See "Let's Look at Children"- ETS).

Creativity. (Biller, Singer, and Fullerton, 1969; Lieberman, 1964; Savoca, 1965).

Curiosity and Exploratory Behavior. (Mimuchin, 1969; ED 018 268; Medinnus and Love, 1965; cf. "Cincinnati Autonomy Test Battery, Curiosity Box" and See Mumbauer, 1969b).

Dependency; Attachment. (Gouin Decarie, 1965; Beller, 1969--S; Sears, Rau, and Alpert, 1965; Kagan and Moss, 1962--S; Mussen and Parker, 1965; Ross, D., 1966; Hartup and Keller, 1960).

Desirable/Undesirable Behaviors. (Kitano, 1962; Allen, 1970; Perline and Levinsky, 1968; Ross, S., 1967).

Detachment. (General Discussion--Rheingold and Eckerman, 1970).

Dominance/Submission. (Emmerich, 1966; Gellert, 1961; Marshall, 1961; King, 1966; Tyler, Rafferty, and Tyler, 1962).

Emotional Communication. (Gilbert, 1969).

Emotionality. (Zunich, 1964; Bauman, 1969; Kagan and Moss, 1962--S; Schwarz and Wynn, no date; Brock, 1963; Mendel, 1965; Kassowitz, 1958; Vernon, Foley, and Schulman, 1967).

Extraversion/Introversion. (Wyer, 1965; Walker, 1963). Interpersonal/Impersonal. (Emmerich, 1964; Emmerich, 1966).

Following Instructions. (Schutte and Hopkins, 1970).

Imitation. (Bandura and Walters, 1963--S; Zahn and Yarrow, 1968; Waxler and Yarrow, 1970; Scholes, 1969; Stein and Wright, 1964; Grusec and Mischel, 1966; Mussen and Parker, 1965; Urbana and Pease, 1960-61; Brigham, 1967).

Leadership. (Murphy and Others, 1956--S).

Maturity. (Smith and Connor, 1962; Sears, Rau, and Alpert, 1965).

Motor Behavior. (Dunlap and Coffman, 1969; cf. Edwards, 1968).

Personality, Global. (ETS PR 69-12, W. Emmerich and G. Wilder).

Person Preference. (McCandless and Hoyt, 1961; Horowitz, 1961; Stevenson and Stevenson, 1960-61; Gould and Kerckhoff, 1960-61; Clark, Wyan, and Richards, 1969; Boger and Cunningham, 1969--S).

Play. (Smilansky, 1968; Wootten and Barnes, 1970; cf. B. Sutton-Smith).

Prosocial Behaviors. (Charlesworth and Hartup, 1967; Marshall, 1961; Raph and Others, 1968; Wahler, 1967; Speers and Lansing, 1969; Hartup and Keller, 1960; Rutherford and Mussen, 1968; Doland and Adelberg, 1967; Hartup and Coates, 1967; Rutherford and Mussen, 1968).

Self Concept. (Wattenberg and Clifford, 1964; Weiner, 1964; Combs and Sapir, 1967).

Sex-Typing. (Biller, 1969; Sears, Rau, and Alpert, 1965; Kagan and Moss, 1962--S; Hartup, Moore, and Sager, 1963; Biller, 1968; Biller, Singer, and Gullerton, 1969).

Temperament. (Thomas, Chess, and Birch, 1968; Bayley, 1968; Schaefer and Bayley, 1963; Moreno, 1968; cf. "Emotionality" and "Adaptive Behavior to Demands").

A REPRESENTATIVE COLLECTION OF TECHNICAL ASSESSMENT PROCEDURES FOR PRESCHOOL CHILDREN

The items included in this list are grouped either by the product or process analyzed or the analytic technique used--whichever appears most suggestive for user retrieval. Although the user will frequently obtain sufficient information from the source listed at the right of the procedure name to instruct himself in the particular assessment procedure, more often he will require opportunity to interact with another student of the technique for mutual clarification. Some procedures clearly require entry skills that may be absent. These skills must be acquired before proceeding if a satisfactory outcome is to be obtained. Finally, some procedures require high-level entry skills, only acquired through extensive formal preparation. These procedures are referenced as in the two preceding lists. Although the initial investment in technical procedures is high, they offer access to a number of child characteristics available, neither through tests nor observational procedures.

TECHNICAL PROCEDURES

Achievement striving from graphic expression. (Aronson, 1958--S).

Adaptive Mechanisms Schedule Scoring of CAT. (Haworth, 1963--S).

Adult Role: Quoting Rules. (Sears, Rau, and Alpert, 1965, Appendix G).

Age judgments. (Zimiles, 1967).

Anthropometrics and somatotypy. (Parnell, 1958--S; Parnell, 1964--S; Meredith, 1968--S; Meredith, 1960--S).

Autotelic Responsive Environment, including "talking typewriter". (Nimnicht and Others, 1967; ED 037 481).

Case study. (Taylor, 1959).

Child initiated questions. (Haupt, 1966).

Child rearing practices. (Sears, Rau, and Alpert, 1965; Mussen and Distler, 1960; cf. "Family Characteristics" and "Parental Teaching Styles").

Children's paintings. (Murphy and Others, 1956--S).

Children's stories. (Pitcher and Prelinger, 1963; Ames, 1966).

Classification skills. (Charlesworth in ETS RM 68-13).

Classroom climate. (Simon and Boyer, 1969--S; Weisdorf, 1965; Swayze, 1966; Hirsch, 1968).

Cognition, general. (Shipman, 1967; "Abstract Ability Tests" and "Preliminary Manual for Quantitative Analysis of Tasks for 1- to 6-Year Old Children", both from Harvard's Preschool Project; Ross, S., 1969; Ross, S., 1967; Inhelder and Matalon, 1960--S; Bruner and Others, 1966--S; Sigel and Hooper, 1968--S; Church, 1970--S; Smith and Roth, 1960).

Cognitive aspects of learning. (Campbell and Frey, 1970--S; Reese, 1963--S; White, 1970--S; Staats, 1970--S; Bijou and Baer, 1963--S; Spiker, 1960--S; "Discriminative Ability Test" from Harvard's Preschool Project).

Conceptual behavior. (McGaughran and Wylie, 1969; Dale, 1969; Birch and Bortner, 1966; Suppes and Feldman, 1969; Pufall and Furth, 1966; Navrat, 1965; Yost, Siegel, and Andrews, 1962; cf."Piagetian concepts").

Controls. (Meichenbaum, 1969; Beiswenger, 1968; Meichenbaum and Goodman, 1969).

Cooperation device. (Brotsky and Thomas, 1967; Wasik, Senn, and Epanchin, 1969; Nelson and Madsen, 1969; Handlon and Gross, 1959).

Copying forms. (Graham, Berman, and Ernhart, 1960).

Dental. (Mico, 1965--S).

Developmental scoring of Rorschach. (Ames and Others, 1952--S; Hemmendinger, 1951--S).

Discrimination learning. (Croll, 1970; Blank and Klig, 1970; Muehl, 1961; Kendler and Kendler, 1962).

Dispenser devices. (Viney and Others, 1968; Nakamura and Lowenkron, 1964; Charlesworth, 1964).

Divergent thinking. (Lieberman, 1965).

Doll play. (Sears, Rau, and Alpert, 1965, Appendix F; Hartup, 1964; Moore and Ucko, 1961; Ucko, 1965; Werner and Evans, 1968; Vaughan, 1964; Ross, S., 1969).

Dramatic play. (Marshall, 1961; Marshall and Hahn, 1965; Smilansky, 1968).

Drawings. (Children's Drawings as Measures of Intellectual Maturity, Harcourt, Brace, and World).

Echoic behavior. (Bricker, 1967).

Egocentrism and private speech. (Kohlberg, Yaeger, and Hjertholm, 1968; Shantz and Watson, 1967).

Ego development stages. (Freud, 1965--S; Loevinger, 1966--S; Reiser and Brown, 1964; Gouin Decarie, 1965; cf. Eriksonian scoring in Pitcher and Prelinger, 1963).

Emotional reactions. (Lore, 1966).

Empathy. (Feshbach and Feshbach, 1969).

Environmental and ecological analysis. (Wolff, 1966--S; "Cognitive Home Environments Scale," D. Weikart; "Inventory of Home Stimulation," B. Caldwell; Schoggen, 1969; Brown, E., 1969; Jackson and Wolfson, 1968; Hess and Others, 1968).

Eye movements. (Efron, 1965).

Family characteristics. (Straus, 1969--S; Baumrind, 1971--S; cf. "Interviews," "Parental teaching styles," and "Environmental and ecological analysis").

Guilt assessments. (Sears, Rau, and Alpert, 1965, Appendix I).

Incomplete story technique. (M. Deutsch).

Interviews. (Sears, Rau, and Alpert, 1965, Appendices A-C; Kagan and Moss, 1962--S; Baumrind, 1971--S; Shipman, 1966; Weber, no date; Diamant, 1969).

Language. (Menyuk, 1964; "The Parsons Language Sample," Spradlin, 1963--S; Linguistic Sector Analysis, Cowe, 1967; Baratz and Povick, 1968; Watts, 1944--S; "Verbal Output Inventory," Stern, 1966; "Language Modalities Test," North Jersey Training School; Raph, ED 015 007; Cazden, 1968; Cazden, 1968--S; Gibson, 1969--S, ch. 19; Carpenter, 1966; Berko and Brown, 1960--S; Loban, 1963--S; Keislar and Stern, 1969; Herriot, 1969; Ervin-Tripp, 1966--S; McNeill, 1970--S; Slobin, 1971--S; Kessel, 1970--S; Bellugi and Brown, 1964--S; "Language Ability Test," Harvard's Preschool Project; Bussis in ETS RM 68-13; cf. "Story retelling," "Incomplete story," and "Speech").

Medical. (North, 1968--S; Mico, 1965--S; Birch and Gussow, 1970--S; Stine, Saratsiotis, and Furno, 1967).

Memory. (Mumbauer, 1969b; Mumbauer and Miller, 1969; Salzinger, Salzinger, and Hobsen, 1967).

Motor behaviors. (Hellebrandt and Others, 1961; cf. "Psychomotor").

Neurological evaluation. (Ozer, 1968--S; Ernhart and Others, 1963; Graham and Others, 1963; "Neurological Evaluation," M. N. Ozer).

Nutritional status and diet. (Dierks and Morse, 1965; Metheny and Others, 1962; Owen and Others, 1969; Kerrey and Others, 1968; Mico, 1965--S; Birch and Gussow, 1970--S).

Optic evaluation. (Kraskin, 1968--S; Savitz, Reed, and Valadian, 1964; Savitz, Valadian, and Reed, 1965).

Parental teaching and interacting. (Barbrack, 1970; Barbrack and Horton, 1970; ED 018 269; ED 018 270; ED 018 256; ED 018 253; Boger and Cunningham, 1970--S, for "Father-Child Interaction" and "Parent-Child Interaction" rating procedures; "Mother-Child Interaction Scale," from Harvard's Preschool Project; Weissman, 1967, for "Task Interaction Form"; Brophy and Others, 1965; Sears, Rau, and Alpert, 1965; Honig, Caldwell, and Tannenbaum, 1969).

Perceptual processes. (Gibson, 1969--S, ch. 15-18; Gibson and Olum, 1960--S; Gollin, 1961; Gollin, 1965--S; Wohlwill, 1963--S).

Piagetian concepts. (Piaget, 1970--S; Young, 1969; Rothenberg in ETS RM 68-13; Pike in ETS RM 68-13; Whiteman, 1967; Ford, 1970; Wohlwill and Lowe, 1962; Sigel, Roeper, and Hooper, 1966; Braine and Shanks, 1965; Elkind, 1966; Elkind, 1961; Hooper and Marshall, 1968; Kofsky, 1966; Shipman, 1966).

Play. ("Experimental Play Situations," Boger and Cunningham, 1970--S; "Miniature Situations Test," S. Santostefano; "Miniature Life Toy Records," Murphy, 1956--S; cf. "Projective play").

Play therapy. (Axline, 1969--S).

Projection, general. (Rabin and Haworth, 1960--S).

Projective play. (Lewis and Others, 1966; Tisza, Irwin, and Zabarenko, 1968).

PROSE, Personal Record of School Experience. (ETS, 1969, pp. 187-213).

Psychiatric evaluation. (Toussieng, 1960; Hotkins, Hollander, and Munk, 1968--S; Mico, 1965--).

Psychomotor. ("Motor Steadiness Battery," H. Klove; Halstead and Rennick, 1966--S; DeHirsch, Jansky, and Langford, 1966--S; Ernhart and Others, 1963; "Reitan-Indiana Neuropsychological Battery for Children," R. Reitan).

Q-sort. ("Preschool Behavior Q-Sort," Baumrind, 1968--S; Baumrind, 1971--S).

Reinforcement delay. (Terrill, 1965--S)

Resistance to temptation. (Sears, Rau, and Alpert, 1965, Appendix H).

Self concept. (Wattenberg and Clifford, 1962; Wattenberg and Clifford, 1964).

Sex-typing. (Sears, Rau, and Alpert, 1965, Appendix J; Kagan and Moss, 1962--S).

Social ability. ("Social Ability Test," Harvard's Preschool Project; "Social Behaviors Test," Ross, S., 1969; "Life Situation Pictures Interview," Estvan, 1965; Estvan, 1966; Estvan, 1959--S).

Social Expectations Scale. (Baldwin and Others, 1969).

Social influence to conform. (Hunt, 1959).

Social interaction. (Marshall, 1961).

Social reinforcement. (Stevenson, 1965--S; Allen, K. E., 1970; Allen, K. E. and Others, 1964; Buell and Others, 1968; Wolf, Risley, and Mees, 1964; Baer, 1962).

Social stratification. (Cultural deprivation scale scores, D. Weikart; "Social Status Scale," University of Minnesota Press; Social stratification guidelines, ETS--L. J. Stricker).

Sociometric picture display device. (Horowitz, 1961; Horowitz, 1962).

Speech. (Speech battery, Byrne, 1962; Daniel and Giles, 1969; Hornby and Hass, 1970).

Stimulus variation. (Hicks and Dockstader, 1968; Charlesworth, 1964).

Story retelling technique. (Monsees and Berman, 1968--S; Johns, 1968--S).

Structured play. (Goodnow, 1969; Franklin, 1969).

Structure of Intellect. (B. Feldman; R. E. Orpet; E. E. Gotts; "Pacific Multifactor Tests," Meyers and Others, 1964--S).

Tactile. (Siegenthaler and Bianca, 1968; Feinberg and Laycock, 1964).

Teacher behavior. ("Observer's Rating Form," Pierce-Jones and Others, 1966; "Beller Scales of Teacher Ratings," Beller, 1969--S).

Tell-a-Story Technique. (DeHirsch, Jansky, and Langford, 1966).

Thematic and stylistic preferences. (Ford and Kaplyay, 1968; Amsden, 1960; Margolin and Leton, 1961; Hicks and Dockstader, 1968; Klapper and Birch, 1969).

Time. ("Time Sequence Task," Tanaka in ETS RM 68-13).

Toy preferences. (Mendel, 1965; Harris, 1967; Madsen, 1968).

TV Testing. (Meier, 1967--S).

Vocabulary. (Kolson, 1960; Nicholson, 1965).

Word association. (Palermo, 1963--S).